The Rocky Flats Dictionary

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a
reference guide to terms and phrases used at Rocky Flats Plant

SW-A-005336

First Edition

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Editor's Note

The Rocky Flats Dictionary is a compilation of words, phrases, abbreviations, initialisms, and acronyms used at Rocky Flats. It incorporates the majority of the material in the Rocky Flats Terminology Standards Manual (1984), and has expanded beyond that publication to encompass additional definitions which are part of the language culture at Rocky Flats. The references listed on page 230 contributed in part to the contents of this document.

Where more than one definition is provided, we imply no usage preference by the sequence of our listing, but instead rely on the reader to attend to the definition which pertains to the area of inquiry.

Some entries are provided with more exhaustive definitions than others. Readers who believe an entry would benefit from additional definition are invited to provide that additional information, using the update pages at the back of this dictionary. Comments received by September 30, 1990 will be incorporated in the Second Edition, scheduled for publication in December 1990.

The Rocky Flats Dictionary is a reference document only and is not intended to be prescriptive or to supplant publications which address policy, procedure, or sequence of operations. The purpose of this document is to ease the translation experience for visitors and new employees, and to facilitate communication for all employees by helping resolve terminology questions encountered in everyday business.

We thank the employees who took the time to review this document, namely the Publications Coordinators of Rocky Flats Plant.

a

A: (1) alpha (uppercase); (2) ampere*; (3) mass number;

AA: Aluminum Association

AAA: American Automobile Association

AAAS: American Association for the Advancement of Science

AAMA: Architectural Aluminum Manufacturers Association

AAR: Association of American Railroads

AARADCOM: Army Armaments Research & Development Command

AAS: American Astronautical Society

AASHTO: American Association of State Highway and Transportation Officials

ABAI: American Boiler & Affiliated Industries

abamp: absolute ampere*

ABEO: All Books Engineering Order (see "DTAB EO")

ABMA: American Boiler Manufacturers Association

ABPA: Acoustical and Board Products Association

abs: absolute*

absorber: any material that absorbs or lessens the intensity of ionizing radiation. A thin sheet of paper will absorb alpha particles and a thin piece of aluminum will absorb all except the most energetic beta particles. Concrete and steel absorb gamma rays. Neutron absorbers (like boron, hafnium, and cadmium) are used in control rods for reactors (see "shielding").

absorption: the process by which the number of particles or photons entering a body of matter is reduced or attenuated by interaction with the matter (see "neutron capture")

AC: alternating current*

ACA: American Compensation Association (training association)

Acc Cont: Access Control

acceptance criteria: specified limits placed on characteristics of an item, process, or services defined in codes, standards, or other requirement documents

accidental loss: the irretrievable and inadvertent loss of a known quantity of SNM as the result of an operational accident. Quantities reported as accidental losses must be determined by measurement or estimated on the basis of measurement.

accountability: (1) the accountability statement in an organization's charter lists the directives and upper-level procedures which the organization must observe in the conduct of its business; (2) the part of safeguards encompassing the measurement system and records and reports to account for source and SNM to minimize the possibility of diversion and detect diversion promptly should it occur. Accountability does not include physical protection.

accountability measurements: the quantitative determination of bulk or special nuclear material attributes used in nuclear materials accounting

accreditation: a process to formally recognize reactor and non-reactor nuclear facility training programs as meeting established accreditation objectives and criteria

accuracy: (1) the quality of closeness to a value specified in a stated reference frame; quantitatively expressed by uncertainty; (2) generic term signifying the closeness of a measured value to the true value or to an accepted reference or standard value; the technically accepted definition of accuracy is bias, which is the difference between the expected value of an estimator and the true value of being estimated; (3) the closeness of a measured value to an accepted reference or standard value

Accy Sys: Accountability Systems

ACD: Advanced Conceptual Design

acfm: actual cubic feet per minute*

ACGIH: American Conference of Governmental Industrial Hygienists

ACI: (1) American Conference Institute; (2) American Concrete Institute

acid: a chemical compound which yields hydrogen ions when dissolved in water

ACO: (1) see "Advance Change Order;" (2) Accounting Close Out

ACS: American Chemical Society

action copy: the copy of an Engineering Order (EO) given to the group responsible for performance as outlined on the EO

activation: the process of making a material radioactive by bombardment with neutrons, protons, or other nuclear particles (see "induced radioactivity")

active systems: systems that require moving parts or motion such as water flow, air flow, electric current flow, mechanical linkage movement, etc., to perform certain tasks

activity: any action involving, or directed at, components or systems that could affect the configuration of the building or the ability to perform its designed function

activity schedule: a schedule covering approximately a six-month period and detailing plant modification and required testing; this schedule is prepared from input by all functional groups residing in the building

ACV: At Completion Variance

ACWP: Actual Cost of Work Performed

A.D.: Anno Domini*

addendum: a document issued to contractors, prior to the bid opening, which changes and/or clarifies the specifications and/or drawings and/or Bidding Documentation issued with the Invitation for Bid or Request for Proposal

ADJARBOR: abbreviation used on a Tool Order to refer to an adjustable arbor

adjustment: an entry into accounting records to reflect an approved, justified, and documented change

ADM: Action Description Memorandum

Adm Apps: Administrative Applications

administrative check: a safeguards term meaning a review to determine that no irregularities appear to exist, no items are obviously missing, and that there is no indication of tampering

administrative controls: relate to provisions on administrative rules governing plant operations, including training programs, internal review and change programs, organizational lines of authority, and operating procedure generation, review and approval processes

Administrative Management: the management of groups or departments; usually the second contact level of management for employees, but may also include higher levels of management

Administrative Safety Controls (ASC): the administrative equivalent of a Safety Limit, but instead of being a limit on an important process variable, procedurally controls facility operational parameters; if exceeded, have the potential to cause a criticality or a breach in a physical barrier that guards against the release of hazardous material, to the extent that the health and safety of the public and employees is placed at a potentially unacceptable level of risk

administrative work: performing job reviews, reviewing and/or picking up paperwork, changing computer disks, incidental work on computer keyboards and all other similar activities

Adm Services: Administrative Services

ADP: Automatic Data Processing (also referred to as Electronic Data Processing [EDP])

adpt.: abbreviation for adapter

ADT: Automated Data Terminals

Advance Change Order (ACO): a change authorization written by an SNLL or LLNL Engineer or a RF Product Engineer (with telecon approval) and issued to authorize a change to products prior to incorporation of a change to a drawing or document

Advance Engineering Release (AER): an authorization for specific production agency actions to prepare for full production long lead-time items and limited fabrication of product

Advance Planning Document (APD): an early DOE/Weapons Programs Division-issued instruction, directive in nature, setting forth production assignments, program plans and preliminary production schedules

A-E: Architect-Engineer

AE: HSE Area Engineer (RF)

AEC: Atomic Energy Commission, original name for the Department of Energy

AED: Aerodynamic Equivalent Diameter

AER: see "Advance Engineering Release"

aerial lifts: power-operated lift devices

aerial personnel lifts: hydraulic or electrically operated lifts with the ability to elevate personnel at various heights, with work normally being accomplished from the lift

af: audio frequency*

A-hr: ampere-hour*

AIA: American Institute of Architects

AIAA: Aerospace Industries Association of America

AIChE: American Institute of Chemical Engineers

AIEE: American Institute of Electrical Engineers

AIME: American Institute of Mining Engineers

AIP: American Institute of Physics

airheads: integrating air samplers

air hp: air horsepower*

air sampling: the collection and analysis of samples of air to measure its radioactivity or to detect the presence of radioactive substances, particulate matter or chemical pollutants

AISC: American Institute of Steel Construction, Inc.

AISE: Association of Iron and Steel Engineers

AISI: American Iron and Steel Institute

AITC: American Institute of Timber Construction

AL: Albuquerque

ALAP: as low as practicable (see "ALARA" [preferred])

ALARA: acronym for "As Low As Reasonably Achievable," a basic concept of radiation protection that specifies that the radioactive discharges from nuclear plants and radiation exposure to personnel be kept as far below regulatory limits as practical

alarm: an energized and/or audible annunciator or light, which serves to alert the operator that action must be taken to prevent damage to equipment, hazard to personnel, or some other undesirable condition

alarm limits: established values for inventory differences which, when exceeded, require immediate action and reporting to the cognizant operations office and the Office of Safeguards and Security (DP-34); for processing, production, and fabrication operations, alarm limits are established with a 99% confidence level (see "control limits")

Albuquerque Workload Planning Guide (AWLPG): the most comprehensive of the DOE-AL publications, containing all weapon schedules and providing ten-year projections; from it, RF plans for budget dollars, manpower and capital equipment

ALI: Annual Limits/Intake

ALIGNTL: abbreviation used on a Tool Order to refer to an alignment tool

ALL BOOKS Engineering Order (ALL BOOKS EO)(DTAB EO): authorization written by the Product Engineer to provide immediate and/or temporary changes to a procedure which, because of time constraints, cannot be accomplished through use of a normal EO revision

alpha-met: an alpha radiation detection instrument placed at strategic locations on glovebox and laboratory hood equipment and used to monitor forearms and hands for radioactive contamination

alpha particle: (alpha radiation, alpha ray); a positively charged particle ejected spontaneously from the nuclei of some radioactive elements; made up of two neutrons and two protons, thus identical with the nucleus of a helium atom; the least penetrating of the three common forms of radiation (alpha, beta, gamma) identical to a helium nucleus that has a mass number of 4 and an electrostatic charge of +2; it has low-penetrating power and short range. The most energetic alpha particle will generally fail to penetrate the skin. Alphas are hazardous when an alpha-emitting radioisotope is introduced into the body.

alpha radiation: heavy particle with low penetration, stopped by paper; health hazard only inside the body; sources: plutonium, uranium, americium

alt: altitude*

AL-WDD: Albuquerque Operations, Weapons Development Division

A/m: ampere per meter*

Am: americium

AM: ante meridiem (before noon)*

AMA: American Municipal Association

AMCA: Air Moving & Conditioning Association, Inc.

AME: Area Maintenance Engineer

amended water: water containing a wetting agent to enhance penetration; Industrial Hygiene approves surfactants that produce amended water (see "surfactant")

AMM: Area Maintenance Manager

AMS: aerial measuring system

amu: atomic mass units*

AN: Army Navy

Anal Labs: Analytical Laboratories

ANC: Army Navy Civilian Aeronautics Committee

anion: negatively charged ion (see "ionization")

ANL: Argonne National Laboratory

annual: a time interval not to exceed fifteen calendar months

ANS: American Nuclear Society

ANSI: American National Standards Institute

anti-contamination (anti-C) clothing: more stringent company-furnished protective clothing that may be required by Radiation Protection and/or Operational Health Physics for specific jobs and/or operations. Full anti-c clothing consists of paper coveralls, hoods, gloves, shoe covers and/or boots; worn in addition to normal precautionary clothing for the purpose of radiological/contamination control; not worn outside the controlled areas

antilog: antilogarithm*

AOM: annual operating and maintenance cost

AOSC: Automated Office Steering Committee

AOV: air-operated valve

APA: American Plywood Association

APC: Assembly Process Card (obsolete); see "Shop Traveler"

APD: see "Advance Planning Document"

APEN: Air Pollution Emission Notice

API: American Petroleum Institute

APL: approved personnel level

apparent loss: the inability to physically locate or otherwise account for (1) any identifiable or discrete item (e.g., batch, lot, or piece) containing nuclear material, (2) a nuclear material inventory difference in which the book inventory value is larger than the physical inventory value by an amount in excess of the established alarm limit, or (3) an unexplained significant shipper/receiver difference

approval letter: a letter or teletype transmission (TWX) from a LANL Engineer to (1) approve changes submitted on a check print by the RF Product Engineer, or (2) confirmatively approve changes accomplished previously by telecon between the RF Product Engineer and the LANL Engineer

approved inventory write-off: a removal from inventory records which has been approved by the proper authority

Approved Product Record (APR): same as Stockpile Approved Product Record (SAPR); (see "Bomb Book")

approx.: approximate

App Tech: Applications Technology

APR: (1) Association of Petroleum Re-refiners; (2) see "Approved Product Record"

APWA: American Public Works Association

ARAC: atmospheric release advisory capability

arbor: a shaft on which a revolving cutting tool is mounted

ARCH: see "Archive Engineering Release"

Architectural-Engineering services: those professional services of an architectural or engineering nature, as well as incidental services, that members of these professions and those in their employ may logically or justifiably perform

archival: saving, as a history record, e.g., past effective information

Archive Engineering Release (ARCH): a document which authorizes retention of an aperture card of the latest drawing issue in the archives and the destruction of the drawing original

AREA: American Railroad Engineers Association

area code: the last two digits of the maintenance charge number (subnumber)

ARG: Accident Response Group

ARI: Air Conditioning and Refrigeration Institute

Armored Personnel Carrier: weapon-equipped military vehicles manufactured for the express purpose of reconnaissance and patrol

ARS: American Rocket Society

ART: Aqueous Recycle Technologies

ARU: acid recovery unit

A_S: atmosphere, standard*

A&S: accident and sickness

AS: Alarms & Safety Systems (category)

ASA: (1) American Standards Association; (2) American Supply Association

asbestos: a group of naturally occurring minerals that separate into fibers. The great majority of asbestos in the U.S. is chrysotile (95%) and to a lesser extent amosite. Certain manmade fibers such as refractory ceramic fibers (RCF) are considered asbestos for control purposes.

asbestos vacuum: a high efficiency particulate air (HEPA) filtered vacuum device approved by Industrial Hygiene and, in radiation control areas, also by Nuclear Safety and Health Physics; for asbestos use only

asbestos worker: a worker whose 8 h personal asbestos air sample exceeds 0.1 fibers/cm^3, as determined by the Occupational Safety and Health Administration (OSHA) Reference Method, or is routinely at risk of exposure to airborne asbestos, as determined by Industrial Hygiene

as-built: describes a drawing or other final design output that incorporates all approved changes and is the final accepted configuration of a project, system component, or item

ASCC: Alternate Security Command Center

ASCE: American Society of Civil Engineers

ASCII: American Standard Code for Information Interchange

A/sec: ampere/second*

ASHRAE: American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.

ASI: American Specification Institute

ASIS: American Society for Industrial Security

ASLE: American Society of Lubricating Engineers

ASM: American Society for Metals

ASME: American Society of Mechanical Engineers

ASNT: American Society for Nondestructive Testing

ASPE: American Society of Plumbing Engineers

as planned: concept by which product is built to the instructions on the product traveler (route) at the time the product is issued to the production floor; in most cases, used to build WR product; allows the Product Engineer to plan and control the configuration of product through the use of "formal tasking"

ASPR: Armed Services Procurement Regulation

ASRF: Advanced Size Reduction Facility

assay: the weight (%) of nuclear material in a given item

Assembly Process Card (APC): obsolete; see "Shop Traveler"

assessment: an appraisal to evaluate the effectiveness of an activity/operation or to determine the extent of compliance with required procedures and practices and/or to perform an evaluation of a material control and accounting anomaly or material discrepancy indicator

ASST: American Society for Steel Testing

assure: to remove doubt, uncertainty, or worry

Assy: Assembly

Assy & Test: Assembly & Testing

ASSYFIX: abbreviation used on a Tool Order to refer to an assembly fixture

Assy Sys: Assembly Systems (obsolete)

ASTD: American Society for Training and Development

ASTM: American Society for Testing Materials

ASTME: American Society of Tool & Manufacturing Engineers

at %: atomic percent*

AT: attenuator

atm: atmosphere*

ATMX: atomic materials rail transport car

at.no.: atomic number*

atom: the smallest part of an element that remains unchanged during chemical reaction, consisting of a nucleus of protons and neutrons surrounded by electrons; the fundamental building block of chemical elements

atomic number: the number of positively charged protons in the nucleus of an atom, which is also equal to the number of electrons on an electrically neutral atom; each chemical element has its own atomic number; together, the atomic numbers form a complete series from 1 (hydrogen) to 103 (lawrencium) in order of increasing atomic weight

atomic weight: the mass of a specific number of atoms (approximately 6 X 10^{23}) in grams; the total number of protons and neutrons in the nucleus of the atom of an element; the mass of an atom (see "mass number")

ATP: Acceptance Test Procedures

ATS: automatic transfer switch

attenuation: the process by which a beam of radiation is reduced in intensity when passing through material; a combination of absorption and scattering processes

attractiveness level: a categorization of SNM types and compositions which reflect the difficulty of processing and handling required to convert material to a nuclear explosive device

A-turn: ampere-turn*

at.wt: atomic weight*

a.u.: atomic units*

audit: (1) a planned and documented activity performed to determine, by investigation, examination, or evaluation of objective evidence, the adequacy of and compliance with established procedures, instruction, drawings, and other applicable documents, and the effectiveness of implementation; not to be confused with surveillance or inspection activities performed for the sole purpose of process control or product acceptance; (2) a documented activity performed in accordance with written procedures or checklists to verify by examination and evaluation of objective evidence, that applicable elements of a quality assurance or safety program have been developed, documented, and effectively implemented in accordance with NQA-1 and specified requirements. These audits are performed in accordance with the criteria noted in NQA-1 using a Lead Auditor certified in accordance with procedure NQP-2-1; (see "DOE Audits," "Quality Assurance Audit [QAA]").

auditor: an individual such as a technical specialist, a management representative, or an auditor-in-training, who performs any portion of a quality or safety audit

authorization schedule: schedule issued by DOE/AL Weapon Programs Division, when sufficient engineering information has been released to the production system to warrant placing a program in Phase 4

automatic actuation logic: the matrix of permissives, interlocks, and any other conditions that must be satisfied in order to generate an automatic actuation

automatic control logic: the matrix of permissives, interlocks, and any other conditions that must be satisfied in order to generate a control function

AVATI: Asphalt and Vinyl Asbestos Tile Institute

AVLIS: atomic vapor laser isotope separation

AVO: see "Avoid Verbal Orders"

Avoid Verbal Orders (AVO): a written authorization (Memoranda, Form RF-34700)

AVS: American Vacuum Society

AV Services: Audiovisual Services

awareness barrier: attachment/device that by physical and visual means warns a person of an approaching or present hazard

AWD: atomic weapons data

AWEA: American Wind Energy Association

AWES: "Blue Max" American Wind Energy Systems

AWG: American wire gage

AWI: Architectural Woodwork Institute

AWLPG: Albuquerque Operations Office Long-Range Planning Guide; see "Albuquerque Workload Planning Guide"

AWPA: American Wood Preservers Association

AWPI: American Wood Preservers Institute

AWS: American Welding Society

awu: atomic weight units*

AWWA: American Water Works Association

AY Drawing: a drawing generated for SNLL product

b

b: barn*; unit of measure for neutron capture cross section. 1 barn = $10^{-24}cm^2$

B: (1) beta (uppercase); (2) blower; (3) boron

BAC: budgeted cost at completion

background radiation: the radiation which comes naturally from the environment, consisting of radiation from cosmic rays and from the naturally radioactive elements of the earth, including that from within the body; radiation occurring naturally everywhere. An average individual exposure from background radiation is 125 millirem per year in mid latitudes at sea level. Colorado has one of the highest background levels in the U.S.

BARHLDR: abbreviation used on a Tool Order to refer to a bar holder

barrier: physical means of separating individuals from a restricted work envelope

base: (1) a compound which yields hydroxyl ions in aqueous solution; (2) a compound that can take up hydrogen ions

baseline configuration: the document(s) number and/or title and current functional revision level for a specific part/component at the time of shop order issue

Baseline Control Unit (BCU): calculation used by Weapons Programs Control to maintain costs and budgets; a major manufactured or purchased component (or grouping of similar components) which has been singled out by the DOE/AL Program Manager as a level of the Work Breakdown Structure where DOE cost control will be required; formerly known as Baseline Reportable Unit (BRU)

baseline design (BD): that design of a new weapon program specified by DOE and DOD as the program's principal engineering design, as opposed to often multiple alternative designs usually proposed simultaneously for the program during Phase 2

Baseline Reportable Unit (BRU): Level 4 that further breaks down Level 3 activities for Manufacturing, P&PE, Tooling, and Process Development; (see "Baseline Control Unit")

BASIC: beginner's all-purpose symbolic instruction code (a computer language)

bat.: battery

bbl: barrel*

"B"-box: containment structure/work box partially open to room atmosphere with restricted openings

bcc: body-centered cubic*

BCD: Bar Code Decal

BCEPC: Boulder County Emergency Planning Committee

BCL: Battelle Columbus Laboratories

BCSO: Boulder County Sheriff's Office

BCU: see "Baseline Control Unit"

BCWP: Budgeted Cost of Work Performed

BCWS: Budgeted Cost of Work Scheduled

BD: see "baseline design"

bd ft: board foot (feet) (see "fbm")*

Be: beryllium

BEA: Building Evacuation Area

becquerel: a unit, in the International System of Units (SI), for the measurement of radioactivity equal to one transformation or atomic disintegration per second

beginning inventory: the quantity of nuclear materials on hand at the beginning of an accounting period

Ben Adm: Benefits Administration

BENDDIE: notation used on a Tool Order to refer to a bend die

BER: beryllium electrorefining

beryllium: light, strong, non-radioactive metal possessing toxic properties

beta particle: an elementary charged particle emitted from a nucleus during radioactive decay, with a mass equal to 1/1837 that of a proton. A negatively charged beta particle is identical to an electron. A positively charged beta particle is called a positron. Large amounts of beta radiation may cause skin burns, and beta emitters are harmful if they enter the body. Beta particles are easily stopped by a thin sheet of metal or plastic.

beta radiation: a light particle which penetrates paper and is stopped by thin plastic; has significantly less health impact than alpha particles; sources include plutonium, uranium, tritium

BeV: billion electron volts*

Bhn: Brinell hardness number*

bhp: brake horsepower*

Bi: (1) biot*; (2) bismuth (crystalline, brittle metal, with reddish tinge)

BIA: Brick Institute of America

bias: (1) the difference between the expected value of an estimator and the true value being estimated; (2) a persistent or systematic error that remains constant over a series of replicated measurements (also known as deterministic error, fixed error, or systematic error)

biennial: a time interval not to exceed thirty calendar months

Bill of Material (BOM): (1) a listing of the required parts of a unit; (2) a list of all engineering parts, components and subassemblies which reflect the full assembly process for a major component or final assembly; prepared by and maintained within Program Management

bioassay/bio-assay: the collection and analysis of human hair, tissue, nasal smears, urine, or fecal samples to chemically determine the amount of radioactive material that might have been deposited in the body. Routes of possible entry are inhalation, ingestion or injection

biological half-life: the time required for a biological system, such as that of a human, to eliminate by natural processes half the amount of a substance (such as a radioactive material) that is present within it

biological shield: a mass of absorbing material placed around a reactor or radioactive source to reduce the radiation to a level safe for humans

bit: binary digit (an information unit equal to one binary decision or designation of one of two possible values)

bit/s: bits per second*

blanket EO: an Engineering Order which authorizes a specific activity, usually of large magnitude

BLASTFIX: abbreviation used on a Tool Order to refer to a blast fixture

bldg.: building*

blend: combining separate and distinct material into one identifiable item; many-to-one function

BLM: Bureau of Land Management

BLNKDIE: abbreviation used on a Tool Order to refer to blank die

BLNKHLDR: abbreviation used on a Tool Order to refer to a blank holder

BLS: Bureau of Labor Statistics (survey)

BM: Building Manager (RF)

bmep: break mean effective pressure*

BNWL: Battelle Pacific Northwest Laboratories

BOA: (1) Blanket Order Agreement; (2) Basic Order Agreement

BOCA: (1) Building Officials & Code Administrators International; (2) Building Officials Conference of America

BOD: biological oxygen demand

BOD_5: Biochemical Oxygen Demand, 5-day incubation period

body burden: the amount of radioactive material which, if deposited in the total body, will produce the maximum permissible dose rate to the body organ considered the critical organ

body counter: instrument used to count radiation in the body, primarily to determine lung burden

body dosimetry badge: combination dosimetry and security badge normally worn on the front of the upper body; used to measure the penetrating and skin radiation dose to which the body may be exposed

BOLSTRPL: abbreviation used on a Tool Order to refer to a bolster plate

BOM: see "Bill of Material"

Bomb Book: Stockpile Approved Product Record (SAPR)

bone seeker: a radioisotope (e.g., plutonium) that tends to accumulate in the bones when introduced into the body; e.g., strontium-90, which behaves chemically like calcium

book inventory (BI) of an MBA: algebraic sum (book = BI + R - S) of the most recent physical inventory of an MBA and of all inventory changes that have occurred since the physical inventory

BORNGBAR: abbreviation used on a Tool Order to refer to a boring bar

bp: boiling point*

bpi: bits per inch*

bps: bits per second*

BPV: Boiler and Pressure Vessel

Bq: becquerel*

Bq/l: becquerels per liter

Bq/m^3: becquerels per cubic meter

BRAZEFIX: abbreviation used on a Tool Order to refer to a braze fixture

BRCC: (1) Blue Ribbon Citizens Committee; (2) Boulder (County) Regional Communication Center

bremsstrahlung: secondary photon radiation produced by deceleration of charged particles passing through matter

brg: bearing

BRIQTDIE: abbreviation used on a Tool Order to refer to a briquetting die

BRL: Ballistic Research Laboratory

BRU: Baseline Reportable Unit - obsolete; replaced by Baseline Control Unit (BCU)

BSI: British Standards Institute

BSPD: see "Building Setpoint Document"

BSPD change: any setpoint change made to the devices/equipment listed in the Building Setpoint Document

BSPD change package: a data package that contains all the necessary engineering information and documents to perform, retest, and document a change made to a device listed in the Building Setpoint Document

BSPD Change Request: an official request to make a controlled change to the BSPD

Btu: British thermal unit*

Btu/ft^2.hr: British thermal unit per square foot per hour*

Btu/lb: British thermal unit per pounds*

Budg: Budgeting

buffer zone: the area between the central facility security fence and the Plant boundary perimeter fence

Building Assessor(s): either the Building Manager and/or personnel who are temporarily assigned to the Building Manager, from departments with responsibilities to the building(s), for the purpose of performing building self-assessments

Building Manager: a senior manager designated as having responsibility for conduct of all operations within a building

Building Safety Program: a program whose charter addresses the elements of building safety. Safety goals with definite timelines are established by the Building Management Team, and are approved by the Building Manager

building self-assessment(s): a continuous oversight of building activities to verify compliance with established requirements, policies, procedures, schedules, limitations, and any area(s) of special interest

Building Setpoint Document (BSPD): a document that provides a method for initiating, analyzing, controlling, and documenting setpoint changes made to specified building equipment

bulk sample: a sample of a building material or other material taken for asbestos content analysis

burden: the amount of radioactive material present in the body or an organ of man or animals

buyer: the managing contractor and/or the assigned procurement individual responsible for a specific procurement

buy item: a weapon's material or component to be produced by a private industry vendor

bypass position: the condition of a valve or damper such that flow is bypassed around a given component of a vital system

byte/s: bytes per second*

C

c: speed of light*

C: (1) Communications (RF); (2) capacitor; (3) carbon; (4) Chord; (5) Celcius; (6) coulomb*; (7) confidential

ca: circa (dates only)*

CA: Contract Administration

CAA: Cost Account Authorization

CAB: Civil Aeronautics Board

CAD/CAM: Computer-Aided Design/Computer-Aided Manufacture

CAE: computer-aided engineering

CAGI: Compressed Air & Gas Institute

calibrate at time of use: allowable practice in which the accuracy associated with the measuring system is less than that of the desired measurement, but the short term precision or reproducibility is very good, allowing the measuring system to be calibrated at the time of use; accomplished by comparing the results obtained from an unknown to the results obtained from a standard of known accuracy; normally performed by the equipment user

calibration: (1) the process of establishing the accuracy of a measuring device, standard, or calibration instrument; (2) the check or correction of the accuracy of a measuring instrument to assure proper operational characteristics (see "counter"); (3) the comparison of a measurement standard or item of test and measuring equipment (instrument) of unknown accuracy to standard or instrument of known accuracy in order to detect, correlate, report, or eliminate by adjustment, any variation (deviation) in the accuracy of the item being compared

calories: a measure of energy in which 1 calorie is the amount of heat necessary to raise the temperature of 1 gram of water 1°C (to bring a quart of water from tap temperature to boiling requires roughly 75,000 calories)

cal stg: calorimeter staging area

CAM: (1) continuous air monitor; (2) Cost Account Manager

CAMAC: computer-automated measurement and control

CAN-SCAN: any one of four segmented package counters

cap.: capacity

CAP: Cost Account Plan

capability: the potential ability, i.e., technology, processes and equipment, to manufacture a specific piece part or assembly

capacity: the ability, i.e., technology, processes and equipment, to manufacture a specified quantity of piece parts and/or assemblies during a specified time period

CAPP: Computer-Aided Process Planning

CAR: see "Corrective Action Report"

carcinogen: any material which, based on scientifically evaluated evidence, can cause cancer in man or animals; includes any substance metabolized into a carcinogen. Epidemiological and toxicological studies, case histories from clinical records, and studies of chemical structure are used by governmental agencies to evaluate the carcinogenic potential of a material.

CAS: Criticality Alarm System

CASB: Cost Accounting Standards Board

case: an optional item, in the vernacular of the Weapons Design Cost Report (WDCR), that might deal with production of design alternatives. (An example of alternate cases is Case 1: build Subassembly XYZ with component 123; Case 2: build Subassembly XYZ without component 123. If both cases are called for, the cost information is presented for both cases.)

cask: a heavily shielded container used to store and/or ship radioactive materials; lead and steel are common materials used in the manufacture of casks (see "pig")

CASTDIE: abbreviation used on a Tool Order to refer to a casting die

cat.: catalog*

$c_{average}$: average concentration

CB: (1) circuit breaker; (2) Compliance Branch (EPA)

CBA: Collective Bargaining Agreement

CBM: Certified Ballast Manufacturers

CBO: community-based organization

CBRA: Copper and Brass Research Association

c.c.: complex conjugate*

C.C.: components checklist

C-C: center-to-center

CC: (1) configuration control; (2) Construction Coordinator; (3) Construction Component Testing

CCB: Change Control Board

CCF: Central Computer Facility (referring to computer operations in Building 881)

CCMD: Committee for Cost Methods Development

CCP: Cost Change Proposal

CCRC: Colorado Civil Rights Commission

CC Test: (1) Construction Component Test; (2) Component Checkout Test

CCTV: closed-circuit television

CCW: (1) Contained Cooling Water; (2) counterclockwise

C_D: drag coefficient

CD: control number for secret correspondence-type documents

CDC: Classified Document Control

CDH: Colorado Department of Health

CDR: conceptual design review (or report)

CE: (1) Criticality Engineering (RF); (2) Cost Engineer

CEM: Cost Estimating Manager

CEMA: Conveyor Equipment Manufacturers Association

cemf: counter electromotive force*

CEP: Capital Equipment Project

CEPC: Emergency Planning Committee (Colorado)

CE&RP: Capital Equipment & Resource Planning

CER: see "Complete Engineering Release"

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

cert. (certs): certification(s)

certificate of conformance: a document signed or otherwise authenticated by an authorized individual certifying the degree to which items or services meet specified requirements

certification: (1) an official endorsement by contractor management of an individual who has completed a qualification and satisfactorily completed any other position requirements, such as a medical examination. The endorsement shall be given by an individual or group other than the individual or group who provided the training or the candidate's immediate supervisor; (2) the act of determining, verifying, and attesting in writing to the qualifications of personnel, processes, procedures, or items in accordance with specified requirements

certification configuration: the document(s) number and/or title and latest functional revision level and approved in-process change documentation used for product certification

certified calibration: documentation of a traceable calibration where an analysis of the data has been performed, such that a statement of expected future performance with respect to time can be made. For a certification to be traceable the data and analysis must be documented and retained.

certified gage/tool: a gage or tool which allows product to be fabricated or accepted either without dimensional inspection or with partial dimensional inspection

certified instructors: a person selected to teach a course who meets educational and experiential requirements, including appropriate instructor certification training

Certified Manufacturing Operation (CMO): used to reduce the amount of gaging and inspection; also uses certified machining tapes and certified tools/fixtures to manufacture and accept product without subsequent inspection or with only partial inspection

certified operators: an individual authorized by DOE Order 5480.6 and by the "Nuclear Safety Facility Experimental Reactor Personnel Certification Program" to undertake experimental operations; referred to as experimenters (reactor operators) and senior experimenters (reactor supervisors)

certified reference material: a reference material, one or more of whose property values are certified by a technically valid procedure accompanied by or traceable to a certificate or other documentation which is issued by a certified body (International Standard Organization Guide Nov. 30, 1981).

certified tape: a numerical controlled machine tape which allows product to be accepted with partial dimensional inspection

cf: confer (compare)*

CFC: control frequency converter

cfm: cubic foot (feet) per minute

CFR: (1) Code of Federal Regulations; (2) Cooperative Fuel Research

C/FRD: confidential/formerly restricted data

cfs: cubic foot (feet) per second

c.g.: center of gravity

cg: centigram*

CGA: Compressed Gas Association, Inc.

cgs: centimeter-gram-second (system)*

CH: contact-handled

change notice: a document issued by Purchasing which directs the CPFF contractor to perform work in accordance with attached EO, drawing, specifications, sketches, etc.

Change Request Reply (CRR): a written rejection of an Engineering Change Request (ECR)

channel: the combination of sensor, line, amplifier, and output devices which are connected for the purpose of measuring the value of a parameter

channel calibration: a channel test which includes an adjustment of the channel such that its output corresponds with acceptable accuracy to known values of the parameter which the channel measures

channel check: a qualitative verification of expected performance by observation of channel status. This verification, where possible, should include comparison of the channel with other independent channels measuring the same variable.

channel test: the introduction of a signal into the channel for verification that it is operable

characteristic: any property or attribute of an item, process, or service that is distinctly describable and measurable

charged particle: an ion; an elementary particle carrying a positive or negative electric charge

charge number: code used for actual cost charging (e.g., job number, part number, tool order)

checker: a competent employee assigned to assess completion of a product or activity; not the same individual who designed the product or performed the activity although can be from the same organization. The checker may be the originator's supervisor, provided the supervisor did not specify a singular design approach or rule out certain design considerations and did not establish the design inputs used in the design.

checklist: a standard form developed for each unit, operation, or area of concern to be used by shift personnel to aid the turnover process. The checklist provides a convenient method of denoting equipment in service, limiting conditions of operation (LCO) status, and other documents oncoming shift personnel should review to ensure a complete transfer of building status information.

checkpoint: a point within an MBA at which nuclear material may either be measured or physically verified

check print: an advance copy of a drawing or procedure revision which is transmitted to Los Alamos for review and approval, and which is not issued to production areas until after LANL approval is received

check source: a radioactive source, not necessarily calibrated, which is used to confirm the continuing operations of an instrument

chem: chemical

chemical: any element, chemical compound, or mixture of elements and/or compounds. From a practical point of view, it includes any liquid, powder/granular material, or compressed gas used in a production, support (Maintenance, Utilities, Custodial, etc), or laboratory setting excluding office supplies. Bulk solid materials are included only when the ordinary intended use is to grind into a powder or vaporize these materials such as welding materials (welding rods, fluxes, base metals, etc.,) when they are subject to welding temperatures.

chemical processing: the separation and recovery of the source and SNM, usually as purified nitrate solution of salts of uranium, plutonium, or thorium

chemistry: the science of the composition and structure of matter and its transformations

Chem Op: chemical operator

Chem Ops Supp Lab: Chemical Operations Support Laboratory

Chem Proc Des: Chemical Process Design

Chem Res: Chemical Research

Chem Stds Supp Lab: Chemical Standards Support Laboratory

Chem Tech: Chemistry Technology

chronic exposure: see "exposure"

CHW: Utility Chilled Water

Ci: curie*

CI: (1) center of impact; (2) cast iron; (3) Construction Inspection

CIM: computer-integrated manufacturing

CIP: cold isostatic pressing

Civ, Struc & Arch Des Engrg: Civil, Structural & Architectural Design Engineering

ck: check

ckg-1: coulombs per kilogram

C_L: lift coefficient

cl: centiliter*

class A (immediate) change: classification assigned to a product change that will minimize the high probability of safety hazards, failure in stockpile, failure in function, loss of reliability, or failure to have interchangeability

class B (urgent) change: classification assigned to product change that will improve safety, stockpile life, function, reliability, or interchangeability

class C (routine) change: classification assigned to a product change made primarily to facilitate manufacturing by improving yields, reducing costs, or saving time, all without degrading safety, stockpile life, function, reliability, or interchangeability; also assigned to separate changes made to eschelon a low-level change into an assembly, if incorporation action is intended to be simply the routine use of product flowing from the lower level change actions

classification: (1) the process of determining and identifying information that requires protection in the interests of national security; (2) the process of protecting identified and classified information

CLC: Colorado Labor Council

CLEANFIX: abbreviation used on a Tool Order to refer to a cleaning fixture

CLFMI: Chain Link Fence Manufacturers Institute

cm: centimeter*

cm^2: square centimeter*

cm^3: cubic centimeter*

Cm: curium

CM: (1) Configuration Management; (2) Construction Management; (3) contract modification; (4) center of mass

CMAA: Crane Manufacturers Association of America

$C_{maximum}$: maximum concentration

CMC: Confirmatory Measurement Counter

CMD: count median diameter

cm Hg: centimeters of mercury*

CM&I: Construction Management and Inspection (obsolete); see "Construction Management"

$c_{minimum}$

$c_{minimum}$: minimum concentration

CML: Critical Mass Laboratory

CMM: (1) Computerized Measuring Machine; (2) coordinate measuring machines

CMO: see "Certified Manufacturing Operation"

cm/sec: centimeter per second*

cn: cosine of the amplitude, an elliptic function*

CNC: computerized numerical control

CNNF: Consolidated Nonnuclear Facility

C/NSI: confidential/national security information

CNWDI: critical nuclear weapon design information

CO: carbon monoxide

COATCHBR: abbreviation used on a Tool Order to refer to a coating chamber

COATFIX: abbreviation used on a Tool Order to refer to a coating fixture

COB: close of business

COBOL: common business-oriented language (a programming language)

COC: continuity of combustibility

COE: cost of energy

coef: coefficient

COEI: Composition of Ending Inventory

COINDIE: abbreviation used on a Tool Order to refer to a coining die

cold SO tests: preliminary tests that check facilities, equipment, and systems using dummy loads, instead of radioactive parts and material, acids and reagents, etc.

colog: cologarithm*

comb.: combination

combo: an alpha radiation detection instrument equipped with two detectors, one for monitoring the hands and other parts of the body and one for monitoring the bottom (soles) of booties or shoes

combustible liquid: any liquid having a flashpoint at or above 100 degrees (37.8°C)

Comm: Communications

commendation: an observation which notes a system, operation, process or procedure which complies with requirements, is efficient, accurate, or well maintained; reflects diligent and continued effort of personnel resulting in quality work

committed dose equivalent: predicted total dose equivalent to a given organ or tissue over a 50-year period after an intake of a radionuclide into the body

Comp Aided Proc Dev: Computer-Aided Process Development

Comp Center: Computer Center

Comp Dev: Component Development

Complete Engineering Release (CER): issues product definition (procedures, specifications, drawings), and authorizes fabrication of product required to meet directive schedule requirements

complex: (1) an ion or compound containing a central metal ion bound to one or more other ions or compounds; complexes may have either a neutral, positive, or negative electrical charge; (2) DOE Complex - refers to the composite of all the DOE facilities

Compliance Verification Report (CVR): obsolete; replaced by Discrepancy Report (DR)

component test: evaluates the performance of a specific component

component unit cost: total material and labor costs associated with the production of one unit for stockpile; includes factors for all in-plant and out-of-plant attrition losses, such as PPI units, TMS units, ETUs, Type 5 units, and all scrap losses

compound: a chemical comibination of two or more elements combined in a fixed and definite proportion by weight

COMPTEMP: abbreviation used on a Tool Order to refer to a comparator template

Comp Tests: Component Tests

Computer-Based Training (CBT): training programs that have been developed and are delivered by computer, such as the AIS-II Computer-Based Training System

conc: (1) concentrated or concentration*; (2) concrete

concentration: the number of grams (or moles) of a substance present in a liter of solution

Conceptual Design Report (CDR) Review: ensures that the baseline project description and justification are adequate for funding consideration. Signature approval on the Design Review Record (DRR) indicates agreement on scope and concept of work to be submitted for funding consideration.

condition adverse to quality: an all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, and nonconformances. A significant condition adverse to quality is one which, if uncorrected, could have a serious effect on safety or operability.

condition restoration time: maximum time allowed to restore process parameters, automatic protection device setpoints, or inoperable equipment to be within the specified OSRs

confidential: level of classification for information or material which, in the event of an unauthorized disclosure, could reasonably be expected to cause identifiable damage to national security

configuration management: (1) a formal system applying technical and management review and approval of changes to design baselines under FE & PM Procedure FAC-20; (2) a project management tool that is designed to determine and control baselines and ensure and document that all components of a project interface both physically and functionally

Configuration Management Board (CMB): a formal group responsible for reviewing and approving all proposed changes to facilities, systems, and/or equipment that are under CM and meet the following criteria: a) cost $100,000 or more; b) have schedule impacts to CPAF, or equivalent, performance goals; and c) involve equipment, processes, and systems designated QAL I or IA or are special projects. The CMB membership consists of the Facilities Project Management Manager (Chairman), Facilities Engineering Manager, Industrial Engineering Manager, Area Maintenance Manager, Production or Plutonium Operations Manager (Direct Report), Program Manager, and Configuration Management Coordinator (Secretariat). Other management representatives provide support to members of the board, as necessary.

confined space: an enclosed area that has the following characteristics: 1) primary function is something other than human occupancy; 2) has restricted entry and exit, (entry and exit restrictions will be determined on an individual basis); 3) may contain potential or known hazards, e.g., toxic, radioactive, flammable, reactive, or corrosive liquids, solids, and/or vapors; 4) may contain inert gases in sufficient quantity to displace the air; 5) may contain physical hazards

confirmative approval: a method of follow-up approval used by Los Alamos for drawing and procedure revisions which may be issued to the normal distribution with confirmative approval, but are subject to Los Alamos review after issue; after LANL receives the revision, it is reviewed and a letter reaffirming LANL approval is submitted to RF; no further revisions may be issued until receipt of LANL's letter

confirmatory measurement: a measurement made to test whether some attribute or characteristic of nuclear material is consistent with the Oexpected response for that material if no significant change has occurred

confirmed human carcinogen: any material associated with industrial processes recognized to have carcinogenic potential for humans

conformance: (1) an affirmative indication or judgment that a product or service has met the requirements of the relevant specifications, contract, or regulation; (2) the statement of meeting the requirements

const: constant*

Const Proj Engrg: Construction Project Engineering

constr.: construction

construction change review: an evaluation activity which ensures that changes during the construction/installation phase of a project are assessed for impact upon the design requirements. The PE obtains the concurrence of appropriate parties. (Addenda to construction contract bid packages, which are strictly technical clarifications or administrative instructions and do not implement an actual design change to the project, do not require plantwide review prior to their final release. Nor do any change documents that deal only with administrative items and do not affect design. Addenda to Fixed Price construction contract bid packages, which implement a design change should be issued concurrently to Purchasing for inclusion in the bid package and for plantwide review. Changes to the addendum, required because of plantwide review comments, are incorporated into the successful bidder's contract via FCO or contract change. This procedure prevents having to change a previously established bid opening date.)

Construction Component (CC) tests: tests which ensure that supplied construction components are free of operational defects in material and workmanship, installed without damage, and perform per construction specifications; performed by the installing agency under the supervision of FE and witnessed by Facilities Inspection (FI) in accordance with construction specifications in preparation for the SO testing; include components and partial system tests, and are thorough enough to ensure successful SO testing. Although CC tests may duplicate SO testing, the involved and responsible parties will differ.

construction contractor: a contractor working under subcontract to the managing corporation or a contractor working under direct contract to the Department of Energy (DOE) on jobs where the managing corporation is responsible for orientation and coordination

Construction Notice (CN): a document which conveys a clarification to the Construction Contractor to resolve contradictions, interpretations, ambiguities, vagueness, or drawing errors in the final design.

construction project data sheet: see "Schedule 44"

construction subcontractor: a contractor working under subcontract to the managing corporation construction contractor (sub-subcontractor) or a contractor working under subcontract to a DOE construction contractor (subcontractor)

containment: for purposes of the Critical Mass Laboratory, a testable enclosure on the overall facility

CONTAINR: abbreviation used on a Tool Order to refer to a container

contamination: the presence of unwanted radioactive or non-radioactive (e.g., chemicals) matter

contamination, radioactive: the deposition of uncontained or unwanted radioactive material on the surfaces of structure, areas, objects, or personnel

contamination survey: an evaluation by smear or swipe and/or direct measurement to determine the absence or level of radioactive contamination on a surface

contd: continued

contract modification: a document which directs the Construction Contractor to proceed with a change less than $25,000 that does not meet the requirements of an FCO, or a change $25,000 or greater. If the desired change can be delayed for 24 hours or more without affecting schedule, safety, health, and/or security, a modification should be issued in lieu of an FCO.

contractors: an employee working under contract at Rocky Flats, not employed by the managing corporation; includes J.A. Jones employees and other contractors

CONTRGA: abbreviation used on a Tool Order to refer to a contour gage

CONTRMA: abbreviation used on a Tool Order to refer to a contour master

control area: an area posted with signs such as an asbestos work area; entry into these areas is limited to those who must enter, and personal protection is required

controlled area: a defined area in which the occupational exposure of personnel to radiation or radioactive material is under the control of an individual in charge of radiation protection (e.g., Plutonium Controlled Area)

controlled process material: material that is used and, in some cases, consumed and replaced, in order to produce components or products according to design intent

control limits: the established values beyond which any variation, in this case inventory difference, is considered to indicate the presence of an assignable cause. Control limits established at the 95% confidence level are called warning limits. Those established at the 99% confidence level are called alarm limits.

control room: an area in a plant from which most of the plant power production and emergency safety equipment can be operated by remote control

Cont Sys Dev: Control Systems Development

℄ or C: centerline
L

CORP: Corporate Headquarters (EG&G)

corrective action: (1) action taken to conform to a standard or required condition; action taken to remedy an error or to remove a deviation; often accompanied by recurrence control; see "recurrence control;" (2) measures taken to rectify conditions adverse to quality and, where necessary, to preclude repetition

Corrective Action Report (CAR): (1) findings observed during an audit are documented in the body of the report and on the Corrective Action Record (CAR); describes each problem and analyzes the cause, provides corrective actions, and recurrence controls to be implemented by responsible management; see "Follow-up;" (2) Corrective Action Record

cos: cosine*

cosh: cosine (hyperbolic)*

COSL: Chemistry Operations Support Laboratory

cosmic radiation (cosmic rays): penetrating ionizing radiation, both particulate and electromagnetic, which originates in space. Secondary cosmic rays, formed by interactions in the earth's atmosphere, account for about 45 to 50 millirem of the 125 millirem background radiation that an average individual receives a year.

Cost Anal: Cost Analysis

cost center: organizational entity performing work

cost element: a category (labor, materials, etc.) of cost incurred

Cost Estim: Cost Estimating

cot: cotangent*

coth: cotangent (hyperbolic)*

counter: a general designation applied to radiation detection instruments or survey meters that detect and measure radiation. The signal that announces an ionization event is called a count (see "Geiger-Mueller counter").

cp: chemically pure*

CP: center of pressure

CPA: Clay Products Association

CPAF: cost plus award fee

cpd: contact potential difference*

CPDS: Construction Project Data Sheets

CPFF: cost plus fixed fee

cplg: coupling

cpm: (1) counts per minute*; (2) cycles per minute*

CPM: Critical Path Method

cps: (1) counts per second*; (2) characters per second*

CPSC: Consumer Products Safety Commission

CPU: central processing unit

C_q: torque coefficient

CR: cold-rolled

CRA: California Redwood Association

craft code: two-character code that denotes a craft in a specific maintenance area

crane: larger hoists with motor-operated drive mechanisms, enabling them to move loads both laterally and vertically

CR&D: Chemistry Research & Development

C/RD: confidential/restricted data

CRERP: Colorado Radiological Emergency Response Plan

CRIMPFIX: abbreviation used on a Tool Order to refer to a crimp fixture

CRIMPTL: abbreviation used on a Tool Order to refer to a crimp tool

Crit Engrg: Criticality Engineering

criticality: (1) self-sustained nuclear fission reaction; (2) in radiation physics, a state in which the number of neutrons released by fission is exactly balanced by the neutrons being absorbed (by the fuel and poisons) and escaping the pile. A reaction is said to be "critical" when it achieves a self-sustaining nuclear chain reaction.

critical organ: the body organ receiving a radionuclide or radiation dose that results in the greatest overall risk

Crit Mass Lab: Critical Mass Laboratory

crossover: the unintentional blending of two or more quantities of material (containing the same element, but containing different percentages of a specific isotope) to the extent that one or more of the original quantities may no longer be identified as being of the original material type

CRP: capacity requirements planning

CRR: see "Change Request Reply"

CRSI-WCRSI: Concrete Reinforcing Steel Institute

CRT: (1) cargo restraint transporters; (2) cathode ray tube

CRUCBLE: abbreviation used on a Tool Order to refer to a crucible

crud: a colloquial term for corrosion and wear products (rust particles, etc.) that become radioactive under a radiation flux (see "induced radioactivity")

CRUSHROL: abbreviation used on a Tool Order to refer to a crush roll

CS: (1) cold storage area; (2) U.S. Department of Commerce, Commerce Standard

CSA: Canadian Standards Association

csc: cosecant*

CSCF: constant speed, constant frequency

csch: cosecant (hyperbolic)*

CSCSC: Cost/Schedule Control Systems Criteria

CSE: Chemical Systems Engineering

CSL: Chemistry Standards Laboratory

CSO/ACSSO: Computer Security Officer/Alternate Computer System Security Officer

CSP: Colorado State Patrol

CSV: Central Storage Vault

C_t: thrust coefficient

CTC: coefficient thermal contraction

CTE: coefficient thermal expansion

CTI: Cooling Tower Institute

cumulative dose: the total dose resulting from repeated exposures of radiation to the same region, or to the whole body, over a period of time.

curie (CI): the basic unit used to describe the intensity of radioactivity in a sample of material; one curie equals 37 billon (3.7×10^{10}) disintegrations per second, or approximately the radioactivity of 1 gram of radium; commonly divided into smaller units; named for Marie and Pierre Curie, who discovered radium in 1898

current inventory (CI): accountable nuclear materials

CUSHPIN: abbreviation used on a Tool Order to refer to a cushion pin

Cust: Custodial

Custodian: (1) the foreman or manager of the using department; (2) employee ultimately responsible for a radioactive source, including its use and storage; (3) a person responsible for records and accounting for source and SNM within a particular MBA

CUTOFFIX: abbreviation used on a Tool Order to refer to a cut-off fixture

CV: cost variance

CVN: charpy V-notch

CVR: Compliance Verification Report (obsolete); replaced by Discrepancy Report (DR)

cw: continuous wave*

CW: (1) clockwise; (2) cold water

CWBS: Contract Work Breakdown Structure

cwt: hundredweight*

CY: calendar year

cycles/min: cycles per minute*

cyl.: cylinder

d

D-B: Davis-Bacon

D-38: tuballoy, depleted uranium

d: deuteron*

da: deka (prefix = 10^1)*

DA: (1) Disbursement Authorization (form); (2) double amplitude*; (3) Destructive Analysis

DAC: derived air concentration (hours)

DACS: Distributed Access/Control System

daily: a time interval not to exceed one calendar day

DAR: Document Accountability Receipt

DAS: (1) Data Acquisition System; (2) Document Accountability System

database: a comprehensive data file arranged to meet the needs of a number of applications, as opposed to one file for each application

daughter element: the nuclide formed by the radioactive decay of another nuclide-the "parent"

daughter products: isotopes that are formed by the radioactive decay of some other radioisotope. In the case of radium-226, for example, there are 10 successive daughter products, ending in the stable isotope lead-206.

dB: decibel*

dBa: decibels absolute*

DBA: Design Basis Accident

DBE: Design Basis Earthquake

dbl.: double

dBm: decibels (referred to 1 mW)*

DBT: Design Basis Tornado

DBW: Design Basis Wind

DC: (1) direct current*; (2) design criteria

DCAA: Defense Contract Audit Agency

DCAS: Defense Contract Administration Services, Defense Supply Agency

DCER: see "Design Criteria Engineering Release"

DCG: Derived Concentration Guide

DCR: (1) Design Change Request; (2) design criteria revisions

DCS: (1) data collection system; (2) distributive control system

DCW: domestic cold water

D&D: Decontamination and Disposal

DEBURRTL: abbreviation used on a Tool Order to refer to a deburring tool

DEC: Digital Equipment Corporation

decay: the spontaneous radioactive transformation of one nuclide into a different nuclide; every decay process has a definite half-life

decay, radioactive: the decrease in the amount of any radioactive material with the passage of time, due to the spontaneous emission from the atomic nuclei of either alpha or beta particles, often accompanied by gamma radiation

decertification: denotes an employee's loss of certification status

decision network: a sequence of questions used in the Make-or-Buy procedure to identify the categories and elements of work that must be performed at RF and those that should be sent to vendors

decontamination: the reduction or removal of contaminating radioactive material from a structure, area, object, or person. Decontamination may be accomplished by (1) treating the surface to remove or decrease the contamination; (2) letting the material stand so that the radioactivity is decreased as a result of natural decay.

definitive design: engineering tasks which include Conceptual Design Reports, Design Criteria, and Title I and/or Title II design; does not include Scope and Estimates and Studies

degrees: degrees Kelvin (K), degrees Celsius (°C), and degrees Fahrenheit (°F) are three different scales. Degrees Fahrenheit are most common in daily life; degrees Celsius are metric units commonly used in general science; degrees Kelvin are used in high-energy physics. Degrees Kelvin start at absolute zero; degrees Celsius start at the freezing point of ice (273K = 0°C = 32°F).

DEMA: Diesel Engine Manufacturers Association

depleted uranium: substance remaining after part of the fissile uranium has been removed; has a percentage of uranium-235 smaller than the 0.72 percent found in natural uranium (see "mill tailings")

dept.: department

DER: see "Development Engineering Release"

DERAS: Designed Emergency Response Authorities (CDH)

deriv: derivative*

design agency(s)(DA): a DOE prime contractor responsible for the design of DOE weapons material and the integrity of the design through stockpile life; Los Alamos National Laboratory (LANL), Lawrence Livermore National Laboratory (LLNL), and Sandia National Laboratories Livermore (SNLL)

designated (designee): personnel selected or assigned specific duties by the operative manager or his/her representative

design-basis phenomena: earthquakes, tornados, hurricanes, floods, etc., that a nuclear facility must be designed and built to withstand, without loss to the systems, structures, and components necessary to assure public health and safety

design change: any revision or alteration of the technical requirements; defined by approved and issued design output documents, and approved and issued changes thereto

design checker: a designated, competent Facilities Engineering (FE) individual, other than who provided the original disposition. The designated individual may be from the same orgainzation as the dispositioning engineer. The designated individual shall have demonstrated competence the specific design area of interest and have an adequate understanding of the requirements and intent of the original design. The design checker may be the dispositioning engineer's supervisor, providing he/she meets the qualifications.

design clarification: a design clarification is an FCO to resolve contradictions, ambiguities, vagueness, or drawing errors in the final design. Clarifications do not affect an operating system, do not potentially impact the health or safety of workers, and do not potentially impact the safety or quality of the finished product. Design clarifications need only the PE's signature and need only be reviewed during the Title II Revisions review period. The PA and Design Manager will sign the EO prior to processing through Engineering Control Systems (ECS).

Design Criteria Engineering Release (DCER): a document which authorizes Rocky Flats to prepare product definition drawings and specifications for Design Agency review and sign-off; from the DCER, DOE six-digit drawing numbers and part titles are assigned

design criteria review: ensures that all major design concepts, including Schedule 44s, and Design Criteria, have been considered. Signature approval on the Design Review Record (DRR) indicates agreement on scope and concept of work to be performed under the project.

design feature (DF): (1) product feature or specification for which the Design Agency retains design responsibility; statement about designed or engineered conditions or features which is important to safety and to which alterations are not to be made prior to appropriate safety reviews; (2) facility physical passive safety features that are to remain constant throughout the life of the plant

design input: those criteria, parameters, specifications, and other documents defining technical requirements of structures, systems, and components

design output: documents, such as drawings, specifications, and other documents defining technical requirements of structures, systems and components

design process: technical and management processes that commence with identification of design input and that lead to and include the issuance of design output documents

design review: the formal review of an existing or proposed design for the purpose of detection and remedy of design deficiencies which could affect fitness for use and environmental aspects of the product, process, or service and/or identification of potential improvements of performance, safety, and economic aspects

Design Support Request (DSR): form used by Project Engineer to obtain support from other engineering groups

detector: a material or device that is sensitive to radiation and can produce a response signal suitable for measurement or analysis; a radiation detection instrument (see "counter")

development: those activities which increase the ability of the organization and/or the employee to respond to opportunities as needs change

Development Engineering: a development program, based upon required military characteristics, culminating in release of complete design information by the Design Agencies; DOE Phase 3

Development Engineering Release (DER): a document which authorizes specific production agency actions related to design, development, or fabrication of development hardware

development for product: the activity which takes place after system acceptance through SO Testing and deals with development and testing in contact with or to make actual product. It is primarily the responsibility of Manufacturing Technology Development (MTD) or Process Technology Development (PTD) and is not a part of the funded authorization project.

Development Job Order (DJO): an individual order for specific reimbursable work which originates from a customer purchase order

development personnel: those individuals in Production Operations, Plutonium Operations, and Quality Engineering and Control with the responsibility for developing or preparing production processes for operating personnel

deviation: a departure from specified requirements

device custodian: the person who is responsible for a radiation-producing device and will be the contact for all communications regarding the device

DFC: digital frequency converter

DFPA: Douglas Fir Plywood Association

D_G: generator drag

DHCP: dicesium hexachloraplutomate

DHW: domestic hot water

dia.: diameter

DIADPGA: abbreviation used on a Tool Order to refer to a diameter and depth gage

DIAGA: abbreviation used on a Tool Order to refer to a diameter gage

DIAHGTMA: abbreviation used on a Tool Order to refer to a diameter and height master

DIAMA: abbreviation used on a Tool Order to refer to a diameter master

diamond stamp: a symbol denoting that product has met all specification requirements and is acceptable for WR use; used only by FPA/DOE

diamond sticker: an affixed marking, used to denote that material and supplies have undergone chemical analysis and/or physical inspection and comply with procurement requirements for use on or with WR product; used only by Facilities Quality Engineering (FQE)

differential pressure: the difference in pressure between two points of a system, such as between the inlet and outlet of a pump

dimensional inspection procedure: an M-procedure issued by Technical Writing which defines the methods and gages used for final acceptance of each part, subassembly and assembly of the WR product.

DIN: do it now

direct fringes: includes the fringe benefits (such as insurance premiums, payroll taxes, company contributions to pension funds, workman's compensation, savings program, premium pay, shift differential, termination costs, etc.) related to fabrication, assembly and inspection direct labor

directive Engineering Order (EO): engineering order which is used to control all actions which will authorize a specific activity or a specific department/group, and which will not affect any other department/group; not used to effect processing changes

directive schedule: a schedule issued by the Weapon Programs Division at least six months prior to FPU-WR; cancels and supersedes the Authorization Schedule and is maintained current

direct labor: includes the procured labor cost which is expended directly upon the materials comprising a finished product for fabrication assembly, and in-line inspection and evaluation; includes labor for nonproductive time (including annual, holiday, and sick leave), preproduction activities (TMS, pilot production, process prove-in, etc.), ETUs, Type 5s, efficiencies, and labor lost through scrap, qualification, and in-plant and out-of-plant attrition

direct material: includes all material (both material for in-house fabrication and vendor-procured components) that form an integral part of a finished product; includes material for preproduction activities (TMS, pilot production, process prove-in, etc.), ETUs, Type 5s, and material lost through scrap, qualification, and in-plant and out-of-plant attrition

direct monitoring: a radiation/contamination survey made by directly scanning the surface with a survey meter probe; cannot distinguish between removable or fixed suface contamination

directorate safety program: a safety program initiated and approved by a Director and implemented through line management

direct production/process engineering operating costs: includes process and industrial engineering, tool and equipment design engineering, and product engineering direct support (salaries and wages, fringes, other manpower costs, and supplies and services) which can be identified with a specific weapon system

direct support - other fabrication, assembly and inspection: includes other manpower costs, and supplies and services related to fabrication, assembly, and inspection direct labor; also includes the manufacturing operation direct support (salaries and wages, fringes, other manpower costs, and related supplies and services) which can be directly identified with or allocated to a specific weapon system for fabrication, assembly, and inspection

direct tooling operating costs: includes procured direct labor, fringe benefits, other manpower costs, and supplies and services related to in-house tooling fabrication; also includes the manufacturing operation direct support (salaries and wages, fringes, other manpower costs, and related supplies and services) which can be directly identified with tooling for a specific weapon system

disassembly: the process of breaking a unit into all of its nuclear or non-nuclear components, either physically or on record

discards: material which has been intentionally removed from inventory and disposed of by transfer to another authorized person or by approved disposal methods

discon.: disconnect

Discrepancy Report (DR): a DOE report, based on an unannounced audit, indicating product did not meet requirements; formerly referred to as Compliance Verification Report (CVR)

disintegration: see "decay, radioactive"

diversion: the unauthorized removal of nuclear material from its approved use or authorized location. The definition of "authorized locations" in the context of diversion of nuclear materials is the responsibility of the cognizant operations office.

DJO: see "Development Job Order"

DJO Project Engineer: person responsible for planning, and estimating cost and delivery, providing technical information to functional groups who perform the actual hands-on work to complete the DJO; the principal customer contact, representing Rocky Flats on DJO technical matters

dm^3: cubic decimeter*

d/m/f: disintegrations per minute per filter

d/m/l: disintegrations per minute per liter

DML: Dimensional Metrology Laboratory

DNA: Defense Nuclear Agency

DNI: Do Not Incorporate; an indication appearing on EOs when instructions are for immediate and temporary use rather than permanent incorporation in an M-document

Doc Cont: Document Control

document: any written or pictorial information describing, defining, specifying, reporting or certifying activities, requirements, procedures, or results

documented evidence: written proof that an action has occurred; also see "Quality Evidence and Objective Evidence"

documents: the statement in an organization's charter lists the documents which the organization generates and for which it is responsible

document status log: listing of document revision status for each assembly-level part

DOD: Department of Defense

DODES: Division of Disaster Emergency Services

DOE: Department of Energy (United States)

DOE Audits: audits performed by the Department of Energy, consisting of four types:

- **QAS 1.0** Management surveys performed by the Quality Assurance division (Albuquerque) to determine: a) the overall adequacy of the production contractor's quality control program, and b) the conformance of Quality Assurance Agency (Rocky Flats-QAA) operations with DOE-QA requirements
- **QAS 2.0** Surveys performed by a committee chaired by the Quality Assurance division (Albuquerque) on designated products or processes to determine the adequacy of the production contractor's quality control operations and product generating processes to produce acceptable material
- **QAS 3.0** Surveys performed by the QA (Rocky Flats) on designated products or processes to determine the adequacy of the production contractor's quality control operations and product generating processes to produce acceptable material
- **QAS 4.0** Surveys performed by QA (Rocky Flats) to assure that the production contractor is in compliance with written process instructions, procedures and specifications

DOE-ID: Department of Energy-Idaho Operations Office

DOE-WIPP: Department of Energy-Waste Isolation Pilot Plant

DOL: Department of Labor

dollar of reactivity: the amount of reactivity increase needed for a reactor to go from critical (k = 1.000) to prompt critical; one one-hundredth of a dollar is one cent of reactivity

don: to put on, such as a respirator

DOR: Direct Oxide Reduction

DOR/ER: Direct Oxide Reduction/Electrorefining

DOS: (1) disk operating system; (2) Dosimetry - Internal and External (RF)

dose: (1) a quantity (total or accumulated) of ionizing radiation received; often used in the sense of the exposure, expressed in roentgens, which is a measure of the total amount of ionization that the quantity of X ray or gamma radiation could produce in air; distinguished from absorbed dose, given in rads, that represents the energy absorbed from any radiation in a gram of any material; (2) the biological damage to living tissue from the radiation exposure

dose equivalent: term used to express the amount of biologically effective radiation when modifying factors have been considered; the product of absorbed dose multiplied by a quality factor multiplied by a distribution factor; expressed numerically in rem

dose rate: the radiation dose delivered per unit time and measured, for instance, in rems per hour

dosimeter: a combination of absorber(s) and radiation sensitive elements that is used to provide a cumulative record of absorbed radiation dose or dose equivalent received, when worn by an individual

dosimetry: the theory and application of the principles and techniques involved in the measurement and recording of radiation doses, the practical aspect of which is concerned with the use of various types of radiation instruments with which measurements are made (see "film badge;" "survey meter").

DOT: Department of Transportation

DOV: Diaphra-Operated Valve

DP: (1) defense programs; (2) data processing; (3) delta pressure; (4) differential pressure

DPA: Development Project Authorization

DPGA: abbreviation used on a Tool Order to refer to a depth gage

dpm: disintegrations per minute*

DPMA: abbreviation used on a Tool Order to refer to a depth master

D-procedure: a draft procedure used for PPI and new program development without formal approval from the Design Agency; product developed using a D-Procedure, and later used for WR production, must be deviated

dps: disintegrations per second*

dr: dram*

DR: see "Discrepancy Report"

Drawing Transfer Engineering Release (DTER): an authorization to transfer drawing originals and the responsibility for maintenance of the drawings to RF, or which requests the return of drawing originals to the Design Agency

DRAWRG: abbreviation used on a Tool Order to refer to a draw ring

DRCC: dual-range coincidence counter

DRCoG: Denver Regional Council of Governments

DRILLFIX: abbreviation used on a Tool Order to refer to a drill fixture

DRILLHD: abbreviation used on a Tool Order to refer to a drill head

DRR: Design Review Record; see "Conceptual Design Report;" see also "design criteria review"

D/S: design station

DSET: Desert Sunshine Exposure Testing, Inc.

DSR: data submittal record

DTA: differential thermal analysis

DTAB EO: Distribute to All Books Engineering Order; see "All Books EO"

D-test: destruction testing

DTG: derivative thermogravimetric

DTR: Director's Training Representative

DU: depleted uranium

DVM: digital voltmeter

DWG: drawing

e

e-: electron

E: (1) antenna; (2) armature; (3) arrester, lightning; (4) binding post; (5) brush, electrical contact; (6) clip; (7) contact, electrical; (8) east*; (9) epsilon (uppercase); (10) exa (prefix = 10^{10})*; (11) RF rotary; (12) Environment (category)

EA: environmental assessment

EA&C: environmental analysis & control

EAC: Estimated Cost at Completion

EACT: Emergency Action and Coordination Team

Early Training Unit (ETU): a pre-First Production Unit weapon made available so that military or assembly plant personnel can become familiar with it

EB welding: electron bombardment welding

EBCWF welding: electron beam cold-wire feed welding

EBW: electron beam welding

EC: eddy current

ECAD: electronic computer-aided design

ECC: see "Engineering Change Control"

ECDAS: Expanded Computerized Data-Acquisition System

ECG: electrochemical grinding

ECM: electrochemical machining

e/cm^2: electrons per square centimeter*

ECMFIX: abbreviation used on a Tool Order to refer to an ECM fixture

ECP: Engineering Change Proposal

ECR: see "Engineering Change Request"

ECS: (1) Emergency Control Station; (2) engineering computer system; (3) engineering control system

Ed.: edition

EDDC: engineering document distribution chart

ED&I: engineering design & inspection

Editorial Review Board (ERB): a formal group responsible for reviewing and approving changes to the Program Management Manual

EDL: economic discard limit

EDM: electric discharge machining

EDMFIX: abbreviation used on a Tool Order to refer to an EDM fixture

EDP: electronic data processing (also referred to as ADP, automatic data processing)

EDS: energy dispersive spectroscopy

education: the knowledge and development resulting from a process involving formal instruction and supervised practice

EE: see "Engineering Evaluation"

EEI: Edison Electric Institute

EEOC: Equal Employment Opportunity Commission

eff: efficiency*

effective half-life: the time required for the amount of a radioactive element present in a living organism to be diminished 50 percent as a result of the combined action of radioactive decay and biological elimination (see "biological half-life")

effectivity date: the date on which a procedure must be used for product processing and acceptance; if available, the procedure may be used before the effectivity date

e.g.: exempli gratia (for example)

EG&G: Edgerton, Germeshausen & Grier; founded 1947; (DOE/RFO Contractor)

egress: to go out

ehp: effective horsepower*

EIA: Electronic Industries Association

EI&C: Electrical Instrumentation and Control (Facilities)

EIS: (1) Effluent Information System; (2) Environmental Impact Statement

EJMA: Expansion Joint Manufacturers Association

EJO: Engineering Job Order, Form RF-46189

EJO meeting: a weekly meeting of managers representing Facilities Project Management (FPM), Facilities Engineering (FE), and Industrial Engineering (IE) to discuss and review Engineering Job Orders and associated issues

elec.: electric

Elec & Cont Sys Des: Electonic & Control Systems Design

Elect Des: electrical design

ELECTROD: abbreviation used on a Tool Order to refer to an electrode

electromagnetic: a traveling wave motion resulting from changing electric and magnetic fields. Familiar electromagnetic radiations range from X-rays (and gamma rays) of short wavelength, through the ultra-violet, visible, and infrared regions, to radar and radiowaves of relatively long wavelength. All electromagnetic radiations travel in a vacuum with the velocity of light (see "photon").

electron: a fundamental particle of matter with a negative electrical charge; an elementary particle with a unit negative electrical charge and a mass 1/1837 that of the proton; electrons surround the atom's positively charged nucleus of the atom and determine the chemical properties of the atom

element: one of the 103 presently-known kinds of chemical substances (e.g., hydrogen, lead, uranium) that make up all matter and that cannot be chemically divided into simpler substances

EM: (1) Equipment Management; (2) Environmental Managment (RF)

EMCC: Emergency Motor Control Center

emf: electromotive force*

emi: electromotive interference*

EML: (DOE) Environmental Measurements Laboratory

Empl: Employment

employee safety escort: a trained and qualified employee who is continually with and accepts responsibility for a non-trained individual; not a security escort

EM/PM: Equipment Management/Preventive Maintenance

EMT: Emergency Medical Technician

emu: electromagnetic units*

enclosure: an area enclosed on all sides by plastic, which is kept negative to the outside with a HEPA-filtered air mover. All asbestos dust produced in the enclosure is kept inside of the enclosure and airborne asbestos is removed from the discharged air by the HEPA filter.

ENCOP: Energy Conservation Project

ending inventory: the quantity of materials on hand at the end of a specific time period

eng.: engineer

Engineering Change Control (ECC): a formal configuration control system for processing Engineering Orders (EOs), Advance Change Orders (ACOs), Engineering Change Requests (ECRs), Requests for Document Change (RDCs), and other change documentation, except for Manufacturing Change Requests (MCRs); uses formal tasking and task scheduling for change accomplishment

Engineering Change Control (ECC) System: see "Engineering Change Control (ECC)"

Engineering Change Coordinator: an employee in Product Definition & Configuration Management (PDCM) who processes Engineering Orders (EOs) received from Product Engineers and converts the EOs to Engineering Change Packages, in compliance with the Engineering Change Control (ECC) System

Engineering Change Request (ECR): a written authorization submitted by the RF Product Engineer to the SNLL or LLNL Engineer to request a change to an SNLL- or LLNL-controlled document, drawing or requirement

Engineering Evaluation (EE): final evaluation by LLNL before going into WR production phase, the documentation of which must be fully approved; the LLNL counterpart to the Sandia Tool-Made Sample (TMS)

Engineering Order (EO): a written authorization from the Product Engineer to change documents used in the manufacture and acceptance of WR and non-WR product

Engineering Review Board (ERB): (1) in Program Management, a formal engineering change board that reviews, evaluates and plans far-reaching and/or complex engineering changes that affect product; (2) a formal group responsible for reviewing and approving the various baselines established for each covered project and for reviewing and approving all proposed changes to facilities, systems, and/or equipment that are under Configuration Management, excluding authorized Field Change Orders, and which cost less than $100,000; have schedule changes that do not impact CPAF, or equivalent or similar, performance goals; and involve equipment, processes and systems designated Quality Assurance Level (QAL) II, IIA, or III.

Engrg: Engineering

Engrg Proto: Engineering Prototype

Engrg Sys: Engineering Systems

enrichment: see "isotopic enrichment"

ensure: to make sure, certain, or safe

entry requirement sign: sign posted at entries to Radiation Controlled Areas specifying requirements for entry to those areas

Env Anal: Environmental Analysis

E&OH: Environmental & Occupational Health

EO: see "Engineering Order"

EOAC: Equal Opportunity Advisory Committee

EOC: Emergency Operations Center

EOCI: Electric Overhead Crane Institute

EP: Emergency Preparedness (RF)

EPA: Environmental Protection Agency

EPC: Emergency Planning Commission (CDH)

EPRC: Emergency Planning Review Committee

EPRI: Electric Power Research Institute

EPZ: emergency planning zone

eq.: equation*

Equip Des & Dev: Equipment Design & Development

Equipment Custodian: the Operating Group Manager, or designee, responsible for the routine production operation of the specific equipment or process to be used for development

Equipment Management/Preventive Maintenance Office (EM/PMO): the function which manages the Preventive Maintenance Program

equipment specification review: an evaluation activity which ensures that all characteristics of items listed in a formal specification document will satisfy the mandatory operational requirements

Equip Proj Engrg: Equipment Project Engineering

equiv.: equivalent

ER: Electrorefining

ERB: see "Engineering Review Board;" see also "Editorial Review Board"

ERDA: Energy Research and Development Administration, changed to DOE (Department of Energy), as applicable

erf: error function*

erfc: error function complement*

erg·sec: erg second*

erythema: an abnormal redness of the skin due to distension of the capillaries with blood; can be caused by different agents -- heat, drugs, ultraviolet rays and ionizing radiation.

escort: an employee who is fully indoctrinated and knowledgeable of safety or security requirements of areas entered by the visitor under their care

ESCSI: Expanded Shale, Clay and Slate Institute

ESDP: Enhanced Site Development Plan

ESG: Energy Systems Group

ESR: (1) electron spin resonance*; (2) Engineering Support Request, Form RF-47188

ESS: Engineering Support Services

estimate: a technically defensible approximation of the quantity of SNM based on process parameters and/or material attributes; used when a direct measurement of the amount of SNM is not possible

esu: electrostatic units*

ET: eddy current testing

et al.: et alibi, et alii (and others)

etc.: et cetera (and other things)

ETL: Electrical Testing Laboratories, Inc.

ETU: Environmental Test Unit: see also "Early Training Unit"

eu: entropy unit*

eV: electron volts*

evaluation support document: document prepared by the AL Quality Assurance Division, with input from the Design Agencies, providing a directive schedule for the production of nuclear and non-nuclear quality evaluation support material

exception: a release from portions of a training program through testing and/or experience

exclusion area: the area around a nuclear or radiation facility to which access is controlled

exp: (1) exponential*; (2) expanded

experiment: the sequence of remotely-controlled efforts by certified personnel which leads to a systematic approach to, or attainment of, a critical condition under the auspices of an approved experimental plan

experimental design: (1) a selection of conditions/settings/materials for specific process variables to be used in a series of tests for the purpose of identifying their individual and combined influences on the results of those tests; (2) the arrangement in which an experimental program is to be conducted, and the selection of the versions (levels) of one or more factors or factor combinations to be included in the experiment

experimental operations: include that portion of the effort of the CML group designed to produce criticality data through experimental measurements; are governed by an approved experimental plan, and may include, among other things, the installation and testing of equipment, the prerun check, fissile material handling, hand stacking, the experiment, and shutdown of the reactor; all non-experimental handling of fissile materials at the CML are governed by Nuclear Materials Safety Limits

Experimenter: a certified reactor operator

Experimenter Trainee: an individual who is designated to receive supervised on-the-job training in order to become certified as an experimenter. This supervision must be performed by a certified experimenter or senior experimenter; cannot fulfill personnel requirements for performing experiments of hand stacking, and cannot authorize anything related to experimental operations

exposure: the act or condition of being subject to the effect or risk of a field of radiation or dispersion of radioactive material. Acute exposure is generally accepted to be a large exposure received over a short period of time. Chronic exposure is exposure received during a lifetime (see "dose").

expr.: experiment(al)

external audit: an audit of those portions of another organization's Quality Assurance Program, not under the direct control of or within the organizational structure of the auditing organization

external correspondence: official communications directed to anyone outside of Rocky Flats, including correspondence to DOE, RFO and other DOE offices.

external radiation: exposure to ionizing radiation when the radiation source is located outside the body

external radiation dose equivalent: radiation dose received from sources of radiation external to the body, usually expressed in rem or millirem (mrem)

external transfer: transfers of nuclear materials from one Receiving Inspection Station (RIS) to another

extremities: the hands and forearms and the feet and ankles. (Permissible radiation exposures in these regions are generally greater than for the whole body because they contain less blood-forming material.)

extremity dosimeter: also known as the "wrist badge;" measures the radiation dose received by the forearm. Dose data from this dosimeter is used to determine the radiation dose to the hands and forearms.

f

f: femto (prefix = 10^{-15})*

F: (1) Fahrenheit*;(2) farad*; (3) Fire (category)

f/16: aperture ratio 16*

FAA: Federal Aviation Agency

Fab: Fabrication

Fac Des Engrg: Facilities Design Engineering

Fac Engrg Adm: Facilities Engineering Administration

Facilities Capability Assurance Program (FCAP): a long-range Facilities Management program intended to manage the aging process by identifying and correcting facilities-related problems in a timely manner

FACP: Fire Alarm Control Panel

Fac Plng: Facilities Planning

fallout: radioactive material that resettles to earth after a nuclear explosion

FAX: facsimile machine

FBF: fluid bed fluorination

fbm: board foot (feet)*

FBU: fluid bed unit

FC: fail closed

FCB: free cutting brass

fcc: face-centered cubic*

FCC: 1) Federal Communications Commission; 2) Federal Construction Council

FCE: Facilities & Construction Engineering

FCI: Fluid Controls Institute

FCM: Facilities & Construction Management

FCO: (1) see "Final Change Order;" (2) Field Change Order

FCR: fixed charge rate

FD: Fire Department

FDR: Final Design Review

FE: Facilities Engineering

FEA: finite element analysis

Fed. Spec.: Federal Specification

FEIS: Final Environmental Impact Statement

FEMA: Federal Emergency Management Agency

FE & PM: Facilities Engineering & Project Management

FEP: field evaluation program

FFP: firm fixed-price

FFTF: Fast Flux Test Facility

FGMA: Flat Glass Marketing Association

fhp: (1) friction horsepower*; (2) fractional horsepower*

FI: Facilities Inspection

FI&C: Facilities Inspection & Coordination

FIDLER: field instrument for detection of low-energy radiation

field change order (fco): (1) directs Maintenance to proceed immediately with a design change; includes an EO with a clear description of the change and any additional sketches, drawings, specifications, instructions, or Quality Acceptance Criteria Checklist (QACC), as required; (2) a document which directs the Construction Contractor to proceed immediately with a field change that costs less than $25,000 that also meets at least one of the following criteria: 1) correct a condition which requires immediate action to avoid a work stoppage or significant contract cost increase, 2) alleviate a health, security, or safety problem, 3) avoid damage to a facility or to equipment

field condition change: a field change order that may enhance, but not alter, existing design requirements; includes field routing of piping/conduit, field wiring, field wiring control systems, and minor equipment location adjustments. Field condition changes do not affect an operating system, do not potentially impact the health or safety of the Maintenance workers, and do not potentially affect the safety or quality of the finished product.

field directive (FD): a document which directs the Construction Contractor to proceed immediately with a field change that costs less than $25,000 that also meets at least one of the following criteria: 1) corrects a condition which requires immediate action to avoid a work stoppage or significant contract cost increase; 2) alleviates a health, security, or safety problem; 3) avoids damage to a facility or to equipment. FDs are issued when time is of the essence and it is necessary for a change to be made in one of the following: 1) specifications and/or designs and/or drawings; 2) method or manner of work performance; 3) Contractor- or Government-furnished facilities, equipment, materials, services, or site; 4) completion schedule (i.e., accelerated schedule).

FIFO: see "First-In First-Out"

fig.: figure*

Filter Inst: Filter Installation

Filt Sys: Filter Systems

Filt Test Sta: Filter Test Station

Final Cert: Final Certification

Final Change Order (FCO): a change authorization written by the RF Product Engineer, with SNLL or LLNL approval, and issued concurrently with the release of new document issues

final design: approved design output documents and approved changes thereto

final design (Title II) review: an evaluation which ensures that the design package is complete in which the PE distributes copies of the complete design package including final checked design drawings; construction specifications including special provisions and technical provisions; procurement specifications (if they have not been previously reviewed); Engineering Orders for Maintenance work with Project Material Lists (PMLs); and any other applicable information to concerned parties

finding: a statement of fact regarding noncompliance with established policy, procedures, instructions, drawings, specifications and other applicable documents

fines: refers to the small metal particles and dust resulting from the operation of any of reciprocating saws, abrasive cutoff wheels, or grinders (including belt sanders, hones, and polishing equipment)

Finished Machined (FM): refers to work performed by outside contractors for Rocky Flats; e.g., machining which can be accomplished more economically by outside contractors than by Rocky Flats personnel

Fin & Res Mgmt: Finance & Resource Management

First-In First-Out (FIFO): term related to method of inventory control and turnover; first item into inventory - first out of inventory; an inventory depletion technique to be utilized by RF Production warehouses

First Production Unit (FPU): DOE Phase 5; manufacture of the weapon according to product specifications initiated with quality control and inspection procedures implemented, culminating in a Major Assembly Release (an authorization to release material for specified uses)

First Scheduled Delivery (FSD): first scheduled delivery of an item in the Interproject Schedule

First Submission Efficiency (FSE): the percent of product that completes the manufacturing process through certification, without rework or deviation

fissile: material that can spontaneously fracture into lighter elements, releasing tremendous energy

fissile material: although sometimes used as a synonym for fissionable material, this term has acquired a more restricted meaning; namely, any material fissionable by thermal (slow) neutrons. The three primarily fissile materials are uranium-233, uranium-235 and plutonium-239.

fission: the splitting of a heavy nucleus into two roughly equal parts (which are nuclei of lighter elements), accompanied by the release of a relatively large amount of energy and frequently one or more neutrons; can occur spontaneously, but usually it is caused by the absorption of gamma rays, neutrons, or other particles

fissionable: material that can be made to undergo fission with neutrons, but which will not do so spontaneously

fission, nuclear: reaction in which an atomic nucleus splits, releasing a large amount of energy

fission products: nuclei of medium atomic weight, almost all of which are radioactive; formed by the fission of heavy elements; examples: strontium-90, cesium-137

fit: refers to how the part/component fits into the next higher level assembly

fixed crane: a crane, attached to a component or a facility that does not change location for use or storage. All cranes in gloveboxes are considered fixed.

fixed surface radioactivity: surface radioactive deposits that are not easily removed except by physical abrasion of the surface. Direct measurement of the radioactivity level includes both fixed plus removable portions.

fixed surface contamination: radioactive material which is tightly adhered to a surface or imbedded in a surface and cannot easily be removed

FL: fail last

flammable liquid: any liquid having a flashpoint below 100°F and having a vapor pressure not exceeding 40 pounds per square inch (psi) or 100°F (37.8°C)

flex.: flexible

flg: flange

flow indicators: a mechanical or electrical device by which flow is verified

FLSA: Fair Labor Standards Act (of 1938) (law)

FLTDPGA: abbreviation used on a Tool Order to refer to a flatness and depth gage

FLTGA: abbreviation used on a Tool Order to refer to a flatness gage

FM: (1) see "Finished Machined;" (2) frequency modulation; (3) finished material; (4) Facilities Manager

FMEA: failure mode and effects analysis

FMS: Flexible Manufacturing System

fnp: fusion point*

FO: fail open

FOD: file or destroy

follow-up: the written response on the Corrective Action Report (CAR) describing the action to be taken with an estimated completion date. Each CAR remains "open" until verification of corrective actions is completed. Audit results are summarized monthly and reported to involved management, the President, the General Staff and the Department of Energy.

FOM: figure of merit

form: (1) the dimensions or physical shape of the part/component; (2) document containing preprinted constant data with spaces for entry of written variable data; also includes certain printed matter such as tags, labels and report covers that are included for control purposes

FORMDIE: abbreviation used on a Tool Order to refer to a forming die

formula: a combination of chemical symbols showing the composition of a molecule or ion

formula weight: the sum of the atomic weights represented in a chemical formula

fortran: formula translation (a programming system)

F&PE: Facilities & Project Engineering

fp: freezing point*

FPA: Final Product Acceptance

FPC: final product certification

FPCC: Fixed Price Construction Contract

FPCO: Final Project Closeout

FPM: Facilities Project Management

FP&R: Financial Plans & Reports

FPR: Federal Procurement Regulations

fps: foot-pound-second (system)*

FPU: First Production Unit

FQA: Facilities Quality Assurance

FQA&I: Facilities Quality Assurance & Inspection

Fr: franklin*

FRD: formerly restricted data

freq: frequency*

friable asbestos: friable asbestos is any material containing asbestos that can be crumbled in the hand, thus easily creating a hazardous airborne dust. Chalky, hard pipe insulation that has been crushed or water damaged is considered friable asbestos unless proven otherwise.

FRMAP: Federal Radiological Monitoring and Assessment Plan

"from" item: an item which will lose its identifiable nature in the blend process and become part of a unique new item

FRP: fiberglass-reinforced plastic (or polyester)

FSAR: Final Safety Analysis Report

FSD: see "First Scheduled Delivery"

FSE: see "First Submission Efficiency"

ft: foot, feet*

ft^2: square foot (feet)*

ft^3: cubic foot (feet)*

ft^3/min: cubic feet per minute

ft·c: foot-candle*

ft·L: foot-Lambert*

ft·lb: foot-pound*

ft/min: foot (feet) per minute*

ft/sec: foot (feet) per second*

function: refers to the use or purpose of the part/component and the way the part/component performs its function

functional group: a group with an organizational code ending in zero and also those subgroups under it headed by a manager

functional non-conforming condition: any non-conformance which could jeopardize the intended function of the Modification Center product; requires formal deviation by SNLA prior to acceptance, as described in the Modification Center Quality Plan

functional/non-functional revision: a functional revision is implemented when the change to the product affects the form, fit or function of that product, and the affected parts/components are not interchangeable

- o fit - refers to how the part/component fits into the next higher level assembly. If the change does not affect how the part/component fits into the assembly, container, CAP, etc., it is a non-functional change.
- o form - refers to the dimensions or physical shape of the part/component. If the change does not affect the physical dimensions of the part/component, it is a non-functional change.
- o function - refers to the use or purpose of the part/component and the way the part/component performs its function. If the change does not affect the basic function of the part, or the manner in which it performs that function, it is a non-functional change.

Any change that does not fit into the above definitions is a non-functional change, e.g., administrative corrections of erroneous part numbers, drawing numbers, part/tool marking, etc. The majority of non-functional changes are administrative in nature and consist of correcting various documentation.

fusion: formation of a heavier nucleus from two lighter ones with the attendant release of energy, as in a hydrogen bomb

FWHM: fullwidth at half-maximum*

FY: Fiscal Year

g

g: (1) acceleration due to gravity*; (2) gram*

G: (1) amplifier; (2) chopper, electronic; (3) gauss*; (4) giga (prefix = 10^9)*; (5) gravitation*; (6) Governor (Colorado)

G&A: general and administrative

ga.: gage, gauge

Gage Des: Gage Design

gal: gallon*

galv: galvanized

gamma radiation: a non-particulate photon ray, capable of penetrating paper, plastic; lead provides an effective shield against gamma radiation; health effects identical to x-rays of the same energy; sources are plutonium, uranium, americium

gamma ray: high-energy, short wavelength electromagnetic radiation emitted from the nucleus. Gamma radiation frequently accompanies alpha and beta emissions and always accompanies fission. Gamma rays are very penetrating and are best stopped or shielded against by dense materials, such as lead or uranium. Gamma rays are identical to X-rays of the same energy; energies are usually between 0.010 and 10 million electron volts (MEV).

gamma spec: gamma ray spectroscopy

GAO: General Accounting Office

Gar, Trk & Lbr: Garage, Trucking & Labor

gaseous diffusion: a method of isotopic separation based on the fact that gas atoms or molecules with different masses will diffuse through a porous barrier (or membrane) at different rates. This method is used to separate uranium-235 from uranium-238; it requires large gaseous diffusion plants and enormous amounts of electric power.

gases: normally formless fluids that completely fill the space and take the shape of their container

GB: glovebox

GBDA: glovebox dry air

g·cal: gram-calorie*

gcd: greatest common divisor*

gcf: greatest common factor*

g/cm^3: grams per cubic centimeter*

g/cm^3·sec: grams per cubic centimeter per second*

Geiger-Mueller counter: a radiation detection and measuring instrument, consisting of a gas-filled chamber, such as a tube containing electrodes, between which there is an electrical voltage but no current flowing. When ionizing radiation interacts in the chamber, a short, intense pulse of current passes from the negative electrode to the positive electrode and is measured or counted. The number of pulses per second measures the intensity of radiation. Named for Hans Geiger and W. Mueller, it was invented in the 1920s; sometimes referred to as a Geiger counter, or a G-M counter.

Ge (Li): lithium-drifted germanium detector

general ledger: a ledger containing accounts reported in summary for all transactions occurring during a specific accounting period

Genl Acctg: General Accounting

Genl Lab: General Laboratory

Genl Mass Spec: General Mass Spectrometry

Genl Met: General Metallurgy

Genl Whse: General Warehouse

GeV: gigaelectron volts*

GFE: government-furnished equipment

GHz: gigacycle per second (gigahertz)*

$g/^2$ or g/l: gram per liter*

GL: (1) General Ledger; (2) General Laboratories (RF)

glovebag: single-use control devices that are used in small-scale, short duration maintenance and renovation operations. Approval for use is received from Industrial Hygiene.

glovebox: an enclosure having openings fitted with gas-tight gloves by means of which certain radioactive or other special materials may be safely handled

Glovebox Custodian: the Manager or Supervisor responsible for a specific glovebox

Glove Change Program Administrator: the individual responsible for maintaining the glove change database

G-M: see "Geiger-Mueller"

g·mol: gram-molecule*

gmv: gram-molecular volume*

GNP: Gross National Product

GO: general order

government-furnished equipment: material and equipment procured through the Purchasing Department, furnished to a construction contractor

gph: gallons per hour*

gpm: gallons per minute*

GPP: General Plant Project

gps: gallons per second*

gr: (1) grain*; (2) gross*

graded safeguards: a system designed to provide varying degrees of physical protection, accountability, and material control to different types, quantities, physical forms, and chemical or isotopic composition of nuclear materials consistent with the risks associated with threat scenarios.

graphite: a form of carbon, similar to the lead used in pencils, used as a moderator in some nuclear reactors, also for molds in high temperature furnaces

gray (Gy): a unit, in the International System of Units (SI), of absorbed dose equal to 1 joule per kilogram; 1 Gy = 100 rad

gr wt: gross weight*

GSA: General Services Administration

GT: group technology

GTAW: gas tungsten arc welding

guideline: a suggested practice that is not mandatory in programs intended to comply with a standard. The word "should" denotes a guideline; the words "shall" and "will" denote a requirement.

h

H-3: hydrogen-3 (also called "tritium")

h: hecto (prefix = 10^2)*

H: (1) eta (uppercase); (2) henry*

ha: hectare*

half-life, biological: the time required for a biological system to eliminate by natural processes, half the amount of a substance which has entered it

half-life, effective: the time required for a radionuclide present in a biological system to be reduced by half as a combined result of radioactve decay and biological elimination

half-life, physical: the time in which half the atoms in a radioactive substance disintegrate; varies from millionths of a second to billions of years

half-mask respirator: see "respirator"

half-thickness: the thickness of any given absorber that will reduce the intensity of a beam of radiation to one-half its initial value. This value varies with radiation energy and beam size and location of shielding (see "attenuation;" "shielding").

HANDLFIX: abbreviation used on a Tool Order to refer to a handling fixture

hand stacking operations: the assembly of fissile material under the auspices of an experimental plan (not covered by a nuclear materials safety limit) with personnel present during reactivity addition; may involve the placement of fissile material onto the critical assembly device in preparation for an experiment

hav: haversine*

HAZ: (1) heat-affected zone; (2) hazardous, as in HAZ-MAT (Hazardous Materials) Team

hazardous chemical: a chemical that is either a health hazard or a physical hazard, or both

hazardous material: a substance or material, including a hazardous substance, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety and property when transported, and which is designated as such in Title 49 of the Code of Federal Regulations, Section 172.101, or the appendix to 172.101, or subject to the Hazardous Waste Manifest Requirements of the U.S. Environmental Protection Agency specified in 40 CFR Part 262.

hazardous waste: a waste as defined in the Colorado Department of Health regulations that exhibits any of the characteristics of a hazardous waste or that is listed in the regulations

hazardous work: (1) work on unguarded elevated surfaces greater than 4 feet; (2) any work with live unguarded electrical AC circuits; (3) any work on battery banks (i.e., UPS equipment); (4) high pressure systems above 15 lbs per sq. in.; (5) work with non-radioactive hazardous materials; (6) work with radioactive materials in quantities that could result in radiation exposures in excess of established guidelines

hcp: hexagonal close-packed*

HDMI: Hardwood Dimension Manufacturers Association

hdp: hardware

HE: high explosive

health hazard: a chemical having the ability to impair the health of a person exposed to it; includes those that are carcinogens (cancer-causing agents), corrosives, toxic or highly toxic agents, irritants, sensitizers, and agents (often call "target-organ agents") that damage or impair such organs as the liver, kidneys, nervous system (including the brain), blood and blood-forming tissues, lungs, reproductive system, skin, or eyes

health physics: the science concerned with recognition, evaluation and control of health hazards from ionizing and non-ionizing radiation

Health, Safety and Environment (HS&E): the directorate at RF which provides information and guidance on impacts to the health and safety of workers and to the environment, especially relating to any new processing capability

heat exchanger: any device that transfers heat from one fluid (liquid or gas) to another fluid or to the environment

heat sink: anything that absorbs heat; usually part of the environment, such as the air, a river or outer space

HEI: Heat Exchange Institute

heliarc: helium enclosed arc (a welding process commonly referred to as TIG [tungsten inert gas--with helium being the inert gas])

HEPA: high efficiency particulate air (filter)

HEPA Filter: High Efficiency Particualte Air filter capable of greater than 99.97 percent efficiency for minute particles

hf: high frequency*

HF: hydrofluoric acid

HFEF: Hot Fuel Examination Facility

hfs: hyperfine structure*

HGTCONST: abbreviation used on a Tool Order to refer to a height constant

HGTGA: abbreviation used on a Tool Order to refer to a height gage

HGTMA: abbreviation used on a Tool Order to refer to a height master

HI: Hydraulic Institute

High Efficiency Particulate Air Filter: the only filter approved for asbestos air purifying respirators and asbestos air movers

High Efficiency Particulate Air Mover: a fan whose air is filtered by one, or two in the case of radiation control areas, HEPA filters

Higher-Risk Pyrophoric Plutonium: higher-risk forms of pyrophoric plutonium subject to 8-hour or less storage requirements for non-inert glovebox atmospheres; can rapidly oxidize when exposed to non-inert atmospheres. Examples include small chips, turnings, fines, oily or non-reburned oxide, skull metal, glovebox floor sweepings containing metal fines, metal pieces less than 5 grams each, machining tool sludges, analytical and R&D residues, samples, specimens, compounds of Pu (hydride and nitride), film, foils, etc.

High Radiation Area: any area accessible to personnel, in which a major portion of the body could receive a radiation dose of 100 millirem (0.1 rem) in one hour. These areas are posted as "high radiation areas" and access into these area is maintained under strict control.

HIP: hot isostatic pressing

hivol: high volume air sampler

HLDGFIX: abbreviation used on a Tool Order to refer to a holding fixture

HLDGRG: abbreviation used on a Tool Order to refer to a holding ring

HLDR: abbreviation used on a Tool Order to refer to a holder

HLLOCGA: abbreviation used on a Tool Order to refer to a hole location gage

HLNCC: high-level neutron coincidence counter

HLW: high-level waste

hm: hectometer*

hm^2: square hectometer*

hm^3: cubic hectometer*

HMA: Hoist Manufacturers Association

hoist apparatus: general family of lifting equipment ranging from small hand-operated chain hoists up through large overhead cranes; does not include elevators. Hoists are operated by hand or by electric or air motors.

holdup: the amount of nuclear material remaining in process equipment and facilities after the in-process material, stored materials, and product have been removed. Estimates or measured values of materials in holdup may be reflected in the facility's inventory records.

HOLOFIX: abbreviation used on a Tool Order to refer to a holography fixture

host: an employee responsible for a visitor to Rocky Flats Plant

hot: a colloquial term meaning highly radioactive

hot SO tests: final tests performed on facilities, equipment or systems that duplicate and assure operability of all systems under actual production or facilities occupancy conditions. These tests use actual loads, flows, acids, reagents, radioactive material, etc.

hot spot: the region in a radiation/contamination area in which the level of radiation/contamination is noticeably greater than in neighboring regions in the area

hp: horsepower*

HP: Health Physics

HPGe: high purity germanium detector, also called "intrinsic"

hp·hr: horsepower-hour*

hr: hour*

HR: (1) Human Resources; (2) hot-rolled

HSA: high specific activity

HS&E: Health, Safety & Environment

HS&E Anal Labs: Health, Safety & Environment Analytical Laboratories

HS&E Data Mgmt: Health, Safety & Environment Data Management

HS&E Inst: Health, Safety & Environment Instrumentation

HS&E Labs: Health, Safety & Environment Laboratories

HS&E Oversight Committee: a committee appointed by the Director of HS&E to monitor the overall HS&E Quality Program

HSM: hospital, surgical, medical (insurance plan)

ht: height

HT: heat treatment

HTFWR: high-temperature fluid wall reactor

hv: high voltage*

HVAC: heating, ventilating, and air conditioning

HW: hot water

HX: heat exchanger

hyd.: hydraulic

hydration: the reaction of molecules of water with a substance in which the H-OH bonds are not broken; the products of the reaction are called "hydrates"

Hydride Ops: Hydride Operations

hydrolysis: the reaction of molecules of water with a substance in which the H-OH bonds are broken

Hz: hertz*

HZ: Hazardous Material

HZMD: Hazardous Waste Management Division (CDH)

HZTM: Hazardous Material Response Team (RF)

i

i: iota (lowercase)

I: (1) iota (uppercase); (2) moment of inertia

IA: Interactive Accountability

IAEA: International Atomic Energy Agency

IAES: Institute of Aerospace Sciences

IBI: Insulation Board Institute

ibid.: ibidem (in same place)*

IBRM: Institute of Boiler and Radiator Manufacturers

I&C: Instrumentation and Control

IC: (1) inductance-capacitance*; (2) installed cost; (3) integrated circuit

ICBA: internal control balance area

ICBO: International Conference of Building Officials

ICCP: Interconnection and Controls Project

ICD: Interface Control Drawing

ICE: Institute of Civil Engineers

ICEI: Internal Combustion Engine Institute

ICI: International Commission on Illumination

ICO: see "Integrated Contractor Order"

ICP: inductively coupled plasma

ICR: Inventory Change Report

ICRP: International Commission of Radiological Protection

ICRU: *International Commission of Radiological Units and* Measurements

ICT: International Critical Tables*

ID: (1) inventory difference; (2) identification; (3) inside diameter

IDC: (1) initiating device circuits; (2) item description code

IDGA: abbreviation used on a Tool Order to refer to an ID gage

IDMA: abbreviation used on a Tool Order to refer to an ID master

IDN: unique material identification number

IDO: Idaho Operations Office (Department of Energy)

I&E: Inspection and Evaluation

i.e.: id est (that is)

IE: *Industrial Engineering*

IEEE: Institute of Electrical and Electronic Engineers

IER: Initial Engineering Release

IES: Illuminating Engineering Society

i.f.: intermediate frequency*

IFB: Invitation for Bids

IFI: Industrial Fasteners Institute

IG: interactive graphics

IGCC: Insulating Glass Certification Council

IGCI: Industrial Gas Cleaning Institute

IGS: interactive graphics system

IGT: Institute of Gas Technology

IGUA: International Guards Union of America

IH: Industrial Hygiene (RF)

IHE: insensitive high explosives

ihp: indicated horsepower*

ihp·hr: indicated horsepower-hour*

IIA: Incinerator Institute of America

IL: see "Internal Letter"

IMECHE: Institute of Mechanical Engineers

imminent danger: an existing condition that could cause injury to personnel, property, or the environment at any time if the condition is allowed to continue without interruption

IMOG: Interagency Manufacturing Operations Group

IMR: see "Incoming Material Report"

in.: inch*

in.^{2}: square inch*

in.^{3}: cubic inch*

incidental operator: an individual who occasionally rigs, loads, and operates cab, pendant, or chain-operated hoists as a task in the accomplishment of his/her normal work assignment; refers to job function, not job title

Incoming Material Report (IMR): the form used by QAA at a production facility to report the receipt of questionable material; a report on DOE-accepted material that has been rejected at the next contractor and is being returned to RF for repair, replacement and corrective action

independent verification: the act of visually checking a condition (such as a valve position) separately from using control indicators, to verify the system's condition or a component's position; ensures that the system is in working condition to specified requirements

INDEXFIX: abbreviation used on a Tool Order to refer to an index fixture

Ind Graphics: Industrial Graphics

Ind Hyg: Industrial Hygiene

indirect costs: all manufacturers' support, except direct, such as manufacturing operation support manpower and other costs which are directly identifiable to support weapons systems and/or end uses, plus other costs to include allocation of the management and administrative services, protective services, and plant maintenance and utility services; defective product returned to the manufacturing agency by next user for disposition, rework, or deviation; product decertified by DOE which must be reprocessed or replaced

Ind Saf: Industrial Safety; formerly I&SSE; see "I&SSE"

induced radioactivity: see "activation"

INEL: Idaho National Engineering Lab

Inertial Fusion: a group within Program Management which supports the Inertial Fusion/Strategic Defense Initiative Programs (in particular at LLNL, but also at other laboratories)

in.Hg: inches of mercury*

initiator: anyone who requests a formal change to designs, systems, projects, etc.

in.-lb: inch-pound*

insignificant change: a design change to drawings or procedures which is deemed not significant enough for Design Agency approval; e.g., if the LANL Engineer determines the revision does not merit the formal review process of confirmative approval or check prints, and designates a change as "insignificant;" means the revision may be handled and distributed as a routine revision, and does not require response from Los Alamos; not to be confused with "cost nonsignificant"

Insp: Inspection

INSPAID: abbreviation used on a Tool Order to refer to an inspection aid

inspection: the process of measuring, examining, testing, gaging or otherwise comparing the unit to verify that it conforms to specified requirements

Inspection Technical Support (ITS): formerly Product Acceptance Technical Support (PATS); provides inspection information to the Product Engineer to use in preparing the Sequence of Operations; reviews and concurs with the completed sequence

inspector: a person who performs inspection activities to verify conformance to specific requirements

Insp Tech Supp: Inspection Technical Support (also ITS)

inst.: install

Inst Mgmt: Instrumentation Management

instru.: instrument

Instructor LED Training(ILT): training conducted by an instructor; methods may include lecture, guided discussion, case studies and role playing

Inst Sys: Instrumentation Systems

insul.: insulation

insure: to make arrangements for indemnification

Integrated Contractor Order (ICO): term used for order of materials between contractors in the Nuclear Weapons Complex; used primarily by Allied Signal for its schedule demands from other contractors; a purchase order placed with a prime contractor for goods or services; a non-negotiable order transferring DOE funding for cost incurred

Interactive Measurement Evaluation and Control System (IMECS): a computer-based measurement control system in use at Rocky Flats

interfaces: the interfaces statement in a group's charter lists the group's formal organizational relationships

internal audit: an audit of those portions of an organization's Quality Assurance Program retained under its direct control and within its organizational structure

internal control system: a set of administrative and accounting policies and procedures implemented by a facility to account for and maintain control of nuclear material; includes checks and balances in the division of duties so designed that the work of one will serve to verify the work of another

internal correspondence: correspondence between employees at the Rocky Flats Plant. Internal Letters (IL) are typed on "Internal Letter" letterhead paper with black printing.

Internal Letter (IL): correspondence between employees at Rocky Flats Plant; see "Internal Correspondence"

internal procedure: a procedure issued to WR and non-WR production areas; may provide process, equipment operation instructions, and acceptance specifications and criteria if M-Procedures are not required by the Design Agencies; also used to document and control various activities such as plutonium recovery operations, waste treatment and packaging operations, and any other activity which requires documentation

internal receipts: materials received by one Rocky Flats MBA from another

internal shipments: materials shipped by one Rocky Flats MBA to another

internal transfer/movement: transfers of nuclear materials within the same RIS (e.g., between different MAAs, MBAs or PBAs)

Interproject (IP) Schedule: a time-phased schedule of the items on the parts/quantity list

inventory difference (ID): the algebraic difference between the nuclear material book and physical inventories

I/O: input/output

IOC: initial operational capacity

ion: an atom or group of atoms (radical) that carries a positive or negative charge as a result of having lost or gained electrons; an electron that is not associated with a nucleus (see "ionization")

ion exchange: a reversible chemical reaction between a solid (ion exchanger) and a water solution by means of which ions may be interchanged from one substance to the other

ionization: (1) the separation or dissociation of molecules into ions of opposite electrical charge; occurs spontaneously in many salts when dissolved in water or melted; (2) the process of adding electrons to, or knocking electrons from, atoms or molecules, thereby creating ions. High temperatures, electrical discharges, and nuclear radiation can cause ionization.

ionization chamber: an instrument that detects and measures ionizing radiation by measuring the electrical current that flows when radiation ionizes gas in a chamber, making the gas a conductor of electricity (see "counter")

ionizing radiation: (1) radiation capable of producing charged particles (alpha, beta), non-particulate radiation (x-rays) and neutrons; (2) any radiation with sufficient energy to displace electrons from atoms or molecules, thereby producing ions. Examples: alpha, beta, gamma, X-rays, neutrons and ultraviolet light. High doses of ionizing radiation may produce severe skin or tissue damage.

I/P: current to pneumatic

IP: interproject; see "Interproject Schedule"

IPCEA: Insulated Power Cable Engineers Association

IPS: (1) inside pipe size; (2) interruptible power supply; (3) in-process solid or solution

IP Schedule: see "Interproject Schedule"

ir: infrared*

IRE: Institute of Radio Engineers

IRF: Integrated Research File

IRONRG: abbreviation used on a Tool Order to refer to an ironing ring

irradiation: exposure to radiation, as in a nuclear reactor

I&SSE: obsolete; refers to Industrial and Systems Safety Engineering; a group reporting to Nuclear/Industrial Safety within the HS&E directorate; replaced by "Industrial Safety (IS);" see "Industrial Safety (IS)"

IS: Industrial Safety (RF)

ISA: Instrument Society of America

ISM: Information Systems Management

ISO: International Organization for Standardization

isotope: (1) atoms/species of an element, having the same atomic number/chemical element, but different atomic weights; (2) one of two or more atoms with the same number of protons, but different number of neutrons in their nuclei. Carbon-12, carbon-13 and carbon-14 are isotopes of the element carbon, the numbers denoting the approximate atomic weights. Isotopes have the same chemical properties, but often different physical properties (for example, carbon-12 and carbon-13 are stable, carbon-14 is radioactive).

isotope separation: the process of separating isotopes from one another, or changing their relative abundances, as by gaseous diffusion or electromagnetic separation. Isotope separation is a step in the isotopic enrichment process.

isotopic enrichment: a process by which the relative abundances of the isotopes of a given element are altered, thus producing a form of the element that has been enriched in one particular isotope and depleted in its other isotopic forms

ISTM: International Society for Testing Materials

ITA: Industry/Cooperative Testing & Analysis Project

ITDC: intensive testing data collection

item: (1) a single piece or container of nuclear material, which has a unique identification and previously determined nuclear material mass, whose integrity can be visually verified; (2) an all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, subassembly, subsystem, system, or unit

item description code (IDC): a three-character code which identifies the nature of nuclear material (e.g., ingot, part, oxide, etc.).

ITR: Internal Transfer Report

ITS: see "Insp Tech Supp"

j

J: (1) connector, receptacle, electrical; (2) joule*

JAIEG: Joint Atomic Information Exchange Group

JAJ: J. A. Jones, subcontractor

JCBORFIX: abbreviation used on a Tool Order to refer to a jib bore fixture

JCC: Jefferson County Coroner

JCCC: Jefferson County Community Center

JCEPC: Jefferson County Emergency Planning Committee

JCHD: Jefferson County Health Department

JCSD: Jefferson County Sheriff's Department

JCUSC: Joint Company/Union Safety Committee (RF)

JIC: Joint Industrial Council

J/K: joule per kelvin*

jkg-1: joules per kilogram

J/kg·K: joule per kilogram kelvin*

JNACC: Joint Nuclear Accident Coordinating Center

job analysis: a systematic method used to obtain a detailed list of the duties and tasks of a specific job; the first step in obtaining the data required for task analysis

job classification matrix: indicates required training for a particular job classification and building location

job personnel: the employees who actually perform the work

Job Supervisor: the immediate supervisor of the employees performing the work

JOC: Joint Industries Council

JSA: Job Safety Analysis

k

k: kilo (prefix = 10^3)*

K: (1) contactor (magnetically operated); (2) kappa (uppercase); (3) kayser*; (4) kelvin*; (5) Koval factor; (6) stiffness

kbar: kilobar*

kc: kilocycles*

kcal: kilocalorie*

kcal/mole: kilocalories per mole*

kCi: kilocurie*

Ke: kinetic energy

keV: kilo-electron volt* (thousand electron volts)

kg: kilogram*

kgauss: kilogauss*

kg·cal: kilogram-calorie*

kgf: kilogram force*

kg·m: kilogram -meter*

kg/m^3: kilograms per cubic meter*

kg/s: kilograms per second*

kHz: kilocycles per second (kiloherz)*

kilo-: a prefix that multiplies a basic unit by 1000; e.g., 1 kilometer = 1000 meters

kiloton: a unit explosive force, equivalent to the force of 1,000 tons of high explosive

kilovolt (kV): the unit of electrical potential equal to 1000 volts

kin: kinetic*

kip: thousand pounds*

kJ: kilojoule*

kl: kiloliter*

km: kilometer*

km^2: square kilometer*

km/sec: kilometers per second*

knowledgeable person: a person trained in the use of a procedure in their area of responsibility

kPa: kilopascals*

KRFP: television station at Rocky Flats

ksi: 1000 pounds per square inch ($kip/in.^2$)*

kt: thousand tons*; kiloton

kV: kilovolt*

kVA: kilovolt-ampere*

kVAr: kilovar*

kVp: kilovolts peak*

kW: kilowatt*

kWe: electrical kilowatt*

kWhe: electrical kilowatt-hour*

kWhr: kilowatt-hour*

kWm: mechanical kilowatt*

kWt: thermal kilowatt*

l

l: liter

L: (1) ballast, lamp; (2) choke coil; (3) coil; (4) Lambert*

lab: laboratory

Laboratory Test Unit (LTU): a weapon subjected to certain conditions to determine precise performance characteristics

LAER: lowest achievable emission rate

LAN: local area network; see "KRFP"

LANL: Los Alamos National Laboratory; formerly LASL

large area swipe: a qualitative survey for removable radioactive material which may indicate the presence of radioactive material

LASL: Los Alamos Scientific Laboratory - obsolete; see "LANL"

lat: latitude*

LATA: Los Alamos Technical Associates

latest instruction: the concept by which product is built to the latest revision of the product drawing, procedures and process definition, as released by Program Management; used for Special Order Work, or as controlled by the Product Engineer

LATHEFIX: abbreviation used on a Tool Order to refer to a lathe fixture

lattice: the structural arrangement of atoms or ions in a solid

lb: pound (pounds)*

lb/bhp·hr: pounds per brake horsepower-hour*

lb/day: pounds per day*

lb·ft: pound-foot (torque)*

lb/ft^2: pounds per square foot*

lb/ft^3: pounds per cubic foot*

lb/hp: pounds per horsepower*

lb/hr: pounds per hour*

lb·in.: pound-inch (torque)*

lb·mass/hr: pounds of mass per hour (torque)*

lcd: (1) least common divisor* lowest common denominator; (2) liquid crystal display

lcm: least common multiple*

L/D: lift-to-drag ratio

LD_{50}: lethal dose (subscript indicates percent)*

LD 50/30: the acute dose of radiation expected to cause death within 30 days to 50 percent of those exposed without medical intervention; generally accepted to range from 400 to 450 rem for humans when received over a short period of time

lead auditor: any individual qualified and certified to organize and direct a quality or safety audit, report audit findings, and evaluate corrective action

lead time: applies to the Interproject Scheduling System; the time between departure from the shipping agency to the time the receiving agency must ship its resulting product either IP or UU; consists of inventory time plus process time at the receiving production agency

learning objective: a well-defined, concise statement that describes a specific behavior, usually containing an action, a condition, and a standard

LED: light-emitting diode

LEID: Limit of Error for Inventory Difference

LET: linear energy transfer

Letter of Administration (LOA): a formal document describing the project, funding, source, method of performance and estimated costs

lf: low frequency*

lgth: length

LGTHGA: abbreviation used on a Tool Order to refer to a length gage

LGTHMA: abbreviation used on a Tool Order to refer to a length master

L-H: labor-hour

LI: line item

LIFECC: life cycle cost computer code

life of production: the time period from Phase 3 through completion of weapon new production during which Production and Surveillance (P&S) costs are incurred to support AL directive schedules

lim: limit*

Limited-Life Component (LLC): a nuclear weapon component that decays with age and required periodic replacement during weapon stockpile life; principle classes of LLCs are reservoirs, neutron generators, and parachutes

Limiting Conditions for Operation (LCO): those administratively established constraints on safety-related facility equipment and operations characteristics which shall be adhered to during operation of the facility. The LCOs specify the minimum performance level required for safe operation of the facility.

Limiting Safety System Settings (LSSS): those limiting values for settings of the safety channels by which point protective action must be initiated; chosen so that automatic protective action will terminate an abnormal situation before a Safety Limit is reached, except for certain uncontrolled accident conditions

limits of error (LE): boundaries within which the value of the attribute being determined lies within a specified probability. The boundaries are defined to be plus or minus twice the standard deviation of the attribute unless otherwise stipulated.

line supervision: the direct supervisor of those individuals who handle fissile material or of those individuals who work in a support function (Maintenance, Radiation Protection, etc.)

Liq Waste Ops: Liquid Waste Operations

Liq Waste Proc: Liquid Waste Processing

LIS: laser isotope separation

LKCHKFIX: abbreviation used on a Tool Order to refer to a leak check fixture

LLC: see "Limited-Life Component"

LLD: lower-level discriminator

LLNL: Lawrence Livermore National Laboratory

LLW: low-level waste

LLWMP: Low-Level Waste Management Program

LMCS: loop multiplexer communication system

LOA: letter of administration

LOADFIX: abbreviation used on a Tool Order to refer to a loading fixture

loc.cit.: loco citato (in place cited)*

LOCGA: abbreviation used on a Tool Order to refer to a location gage

lockout device: a device that utilizes a lock and ley (and other mechanical devices such as a chain, hasp, or bar secured by a lock and key) to secure an energy isolating device in the safe position

Lockout/Tagout (L/T): the process of the authorized placement, removal, and administrative control of tags and locks used to ensure the protection of personnel, environment, and equipment

Lockout/Tagout Coordinator (LTC): the knowledgeable person authorized to approve, issue, and administratively control all Lockout/Tagouts in their area of responsibility. LTCs shall be assigned for each building and for each plantwide system to include Plant Power, Fire Protection Systems, Utilities, and Alarms. The Shift Superintendent's Office maintains an up-to-date list of all building LTCs and plantwide system LTCs.

Lockout/Tagout Permit (LTP): the document defining and authorizing the Lockout/Tagout

LOE: Level of Effort

log: logarithm (common)*

logs: records used by operating and support personnel to describe or record information and events necessary for evaluating building conditions

log sheets (round sheets): a record of those system/process parameters that are to be recorded for equipment, operations, or areas located within the responsibility of a particular shift station or administrative position; includes maximum and minimum acceptable operating parameter values, as appropriate, plus space for personnel comments. Typical logsheets include Process Run Sheets, Utilities Round Sheets, Lockout and Tag Log.

long-range schedule: a schedule covering approximately a six-month period and detailing plant modification and required testing; prepared from input by all functional groups residing in a building

LOSAC: Low Specific Activity Counter

Low Population Zone (LPZ): an area of low population density often required around a nuclear installation. The number and density of residents is of concern in emergency planning so that certain protective measures (such as notification and instructions to residents) can be accomplished in a timely manner.

l/s: liters per second

LSA: low specific activity

LT: lead time

LTD: long-term disability

LTDC: long-term data collection

lum.: lumen*

lum.·hr: lumen-hour*

lum./W: lumens per watt*

lung counter: an instrument system used to identify and measure radioactivity in the lungs of human beings; uses heavy shielding to keep background radiation interference low and ultrasensitive radiation detectors and electronic counting equipment

lx: lux*

m

m: (1) mass*; (2) meter*; (3) milli (prefix = 10^{-3})

M: (1) Mach number*; (2) mega (prefix = 10^{6})*; (3) moment*; (4) mu (uppercase)

M: molar (concentration) (with number only, e.g. 0.5M)*

m^2: square meter*

m^2/sec: square meter per second*

m^3: cubic meter*

M_A: aerodynamic moment

mA: milliampere*

MA: Maintenance Addendum

MAA: Material Access Area; an area which contains a Category I quantity of SNM and is specifically defined by physical barriers, located within a Protected Area, and subject to specific access controls

MAAM: Mobile Ambient Air Monitoring (van at Rocky Flats)

mach.: machine

Mach, Uran Comp: Machining, Uranium Components

maintenance and rebuild support definition (PPD-C-XX): a document prepared by Sandia Laboratories which defines the material required to support rebuild of Laboratory and Flight Test samples to WR

Maintenance Construction: term used to define Maintenance as the performing agency for construction and installation of authorization projects

Maintenance Work Request (MWR) review: ensures that modifications to existing plant facilities comply with safety and environmental standards and design criteria for a non-reactor nuclear facility, as well as fulfilling the User's requested performance enhancement.

Major Component (MC): (1) a specially designed item of piece parts, hardware, material and the like, designed to perform a specific operational instruction; designation of major components throughout production agencies such as a J-line Assembly; (2) special design items which are classified as an entity in regard to function and material control, for purposes of design specifications; identified by an MC number; not to be confused with RF Material Control (MC) number

major cost item: any weapon's material or component for which the total estimated cost of procurement and manufacture, through the life of production, exceeds $500,000

Major Impact Report (MIR): a short, comprehensive report which identifies potential impacts on RF production activities, usually written in Phase 2 or 2A prior to the design award of a weapon program; may include capital equipment procurement requirements, dates for Advanced Engineering Releases, implications for safety, identification of potential technical and manufacturing problems, and an assessment of Rocky Flats' ability to support the Phase 5 production date; may also include funding requirements for capital equipment, tooling, testing equipment and gages, process engineering, and process development

major revision: significant changes in procedure scope or responsibilities and actions

make item: a weapon's material or component to be provided by a Management and Operating (M&O) contractor

Make-or-Buy Committee: management and operating (M&O) contractor committee established for the purpose of developing Make-or-Buy recommendations on major cost items

make-or-buy decision: a make-or-buy recommendation which has been reviewed and approved by management and operating (M&O) contractor management

make-or-buy recommendations: a documented proposal, developed by the Make-or-Buy Committee, to make or buy a major cost item

Management Information System (MIS): the DOE-wide integrated, computer-based data processing system designed to provide a plan for the economical and effective management of DOE data resources

Manufacturing Change Request (MCR): a request written by Production or Support Operations personnel to request changes to Process Operations Sheets (POSs) or Shop Travelers

Manufacturing Resource Planning (MRP): the automated system used by RF for product manufacture, scheduling, etc.

Manufacturing Technology Development (MTD): associated with Process Technology Development; identifies new processes, equipment needs and potential problems associated with new processing capability requirements; establishes milestones for getting new processes into production; establishes procedures for program surveillance; provides team representatives who analyze design information and contribute to the technical database being developed by the Product Engineer; contributes to the formulation of product trees, producibility assessments and sequences of operations at the request of the Product Engineer; reviews the above for accuracy and completeness; prepares process development and process engineering labor and material estimates, by fiscal year, for all RF components; provides technical expertise, as necessary, to help other team members complete the WDCR

MARKFIX: abbreviation used on a Tool Order to refer to a marking fixture

MAS: see "Master Assembly Schedule"

mass-energy equation: the equation developed by Albert Einstein which is usually given as $E = mc^2$, showing that the energy of a body, E (no matter what form the energy takes), varies with the product of the mass, m, of the body and a factor, c^2. The factor c^2, the square of the speed of light in a vacuum, may be regarded as the conversion factor relating units of mass and energy. The equation predicted the possibility of releasing enormous amounts of energy by the conversion of mass to energy; also called the "Einstein equation"

mass number: the sum of the number of protons and the number of neutrons in a nucleus

Mass Supp Lab: Mass Support Laboratory

Master Assembly Schedule (MAS): a document prepared and distributed by Pantex, showing planned UU build quantities by week; no longer used at RF

Master Change Record: the official RF document with which recommendations for changes in facilities, systems, and equipment under CM are made; documents the change process and decisions; required to document the review and approval of changes to design baselines established prior to construction

Master Nuclear Schedule (MNS): a set of three volumes published by Production Operations Division - DOE/AL (POD) for management of nuclear materials and scheduling of limited-life components (LLCs); volumes are: 1-Descriptor; 2-Nuclear Material Balance; 3-LLC Shipping Schedules

Master Program Schedule (MPS): the interproject schedule issued by Program Operations Planning detailing, by program and component, WR delivery requirements for an eight-year period and providing schedule direction for RF production in support of WR programs; the program schedule of major milestones to be achieved from Phase 3 through FSD

Master Safeguards & Security Agreement (MSSA): a binding agreement between DOE/HQS and a Field Element (DOE/RFO) regarding the acceptable level of risk and the prescribed levels of protection for DOE assets

material: (1) items used by the Maintenance Department on all authorized work (Authorization, Engineering Orders (EOs), requested by other departments and items used to repair departmental equipment or for departmental improvements; can be Warehouse stock items or spare parts or direct purchase (non-stock) items; (2) any raw, in-process, or manufactured commodity, equipment, component, accessory, part, assembly, or product of any kind

material balance: the comparison of input and output of material quantities for a process. Generally, the comparison is between beginning inventory (plus receipts) and ending inventory (plus shipments) plus measured discards for a specific time interval; similar to book inventory

Material Balance Area (MBA): a subsidiary account of the facility designed to establish accountability and localize inventory differences

Material Control (MC): a six-digit internal control number assigned to raw materials at the time of their receipt from vendor; ties the vendor heat treat (HT) lot to different-sized bars within the heat

material control alarm: alarms from loss detection elements (e.g., SNM monitors, material surveillance. etc.) which may indicate abnormal situations and/or unauthorized use/removal of nuclear material

material control and accountability (MC&A): that part of safeguards that detects or deters theft or diversion and provides assurance that all nuclear materials are present

Material List (ML): a listing of all the constituents of the subject, such as subassemblies, components, and tools, gages, and procedures required to manufacture, inspect, and certify the Design Agency-controlled features of the product; part of an SNLL drawing set (separate sheet); part of a graphic drawing at LLNL and LANL

Material Review Board (MRB): consists of MS&C, PQE, Engineering and Purchasing who meet to disposition parts on defective material received from vendors and to resolve issues when vendors take exception to requirements on solicitations

Material Status Report (MSR): a report of inventory status and changes, including nuclear material received, produced, possessed, transferred, consumed, disposed of, or lost during a specified period

matl: material

Matl Eval: Materials Evaluation

Matl Mgmt Sys: Materials Management Systems

Matl Sched & Cont: Material Scheduling & Control

max.: maximum

Maximum Permissible Concentration (MPC): the amount of radioactive material in air and water which, when inhaled or ingested, based on all current knowledge, will produce no measurable adverse effects

Maximum Permissible Dose (MPD): that dose of ionizing radiation or quantity of radioactive material which, based on all current knowledge and research, will produce no measurable adverse effects during a person's lifetime; see also "burden"

may: denotes permission, neither a requirement nor a recommendation

Mb: megabyte*

MBA: Material Balance Area

Mbar: megabar*

mbar: millibar*

MBMA: Metal Building Manufacturers Association

MBSA: Modular Building Standards Association

MC: (1) see "major component;" (2) Rocky Flats Environmental Monitoring Council (Colorado); (3) Material Control

MCA: (1) maximum credible accident; (2) multichannel analyzer; (3) Manufacturing Chemists' Association

MC&A: Material Control and Accountability

MCC: Motor Control Center

mc/I: bending stress

mCi: millicurie*

MCi: megacurie*

MCO: Maintenance Change Order

MCR: (1) see "Manufacturing Change;" (2) master change record; (3) Maintenance Change Request

Mc/s: megacycle per second*

MD: Medical (RF)

MDA: minimum detectable amount

MDC: minimum detectable concentration

meas: measured*

measured discards (normal operational loss [NOL]): the measured loss of material separated from a process stream as waste and not intended to be recovered

measured value: (1) a quantitative characteristic and its associated uncertainty that has been determined for nuclear materials; (2) value of a parameter as it appears on the output of a channel or other measuring device

measurement: process of obtaining numerical results from experiments designed to determine the value of a physical or chemical property of a material or physical system

measurement code: a three-digit code used to identify a unit of measure (e.g., liters, grams, etc.)

measurement control: the procedures and activities used to ensure that a measurement process generates measurements of sufficient quality for their intended use

measurement control sample: a synthetic sample having known accuracy, prepared to mimic the analyte and matrix (as closely as possible) of unknown samples. The measurement control sample must be traceable to the national standard base or be well-characterized by approved methods. A measurement system's performance is evaluated by comparing the measured value of the control sample to its known value.

Measuring and Test Equipment (M&TE): devices or systems used to calibrate, measure, gage, test, and inspect in order to control or acquire data to verify conformance to specified requirements

mega- (M): a prefix that multiplies a basic unit by 1,000,000

megacurie (MCi): one million curies (see "curie")

megaton: a unit of explosive force equivalent to the force of 1,000,000 tons of high explosive (TNT)

mep: mean effective pressure*

meq: milliequivalents*

MES: Monitoring & Enforcement Section (CDH)

met op: Metallurgical Operator

Met Ops: Metallurgical Operations

METS: Metropolitan Emergency Telephone Service

Met Supp: Metallurgical Support

MeV: million electron volts*

mf: medium frequency*

Mfg Supp: Manufacturing Support

Mfg Tech Supp: Manufacturing Technical Support

mfp: mean free path*

mg: milligram*

MG: motor generator*

mg/100 cc: milligram percent*

Mgal/day: million gallons per day*

mg·hr: milligram-hour*

mg/l: milligrams per liter

mg/m^3: milligrams per cubic meter

mgr: manager

mH: millihenry*

mho: (1) conductivity*; (2) reciprocal ohm*

MH&P: Material Handling & Packaging

MHU: (1) Material Handling Unit; (2) mechanical heating unit

MHW: Mixed Hazardous Waste

mHz: millihertz*

MHz: megahertz

mi^2: square mile*

MICARTRG: abbreviation used on a Tool Order to refer to a micarta ring

micro-: a prefix that divides a basic unit into one million parts

microcurie: a one-millionth part of a curie (see "curie")

microsecond: a one-millionth part of a second

microfilm: medium used for transfer of drawings and procedures to Design Agencies

mig weld: microwire inert gas weld

mil: measure for wire diameter (1/1000 in.)*

MIL: military specifications

mill: cost factor (1/1000 dollar)*

MILLFIX: abbreviation used on a Tool Order to refer to a mill fixture

MILLHD: abbreviation used on a Tool Order to refer to a mill head

milli- (m): a prefix that divides a basic unit by 1000

millirem (mrem): a one-thousandth part of a rem (see "rem")

milliroentgen (mR): a one-thousandth part of a roentgen (see "roentgen")

mill tailings: naturally radioactive residue from the processing of uranium; although the milling process recovers about 93 percent of the uranium, the residues, or tailings, contain several radioactive elements, including uranium, thorium, radium, polonium and radon

min: (1) minute*; (2) minimum

minor revision: obsolete organizational names and position titles, obsolete/incorrect abbreviations, spelling errors, and updating forms

MIR: see "Major Impact Report"

MIS/FIS: Management Information System/Financial Information System

mission: the mission statement in an organization's charter, which explains what the organization does

MIV: machine interface unit

mixture: a blend of elements or compounds which are not chemically combined and may be separated mechanically

m·kg: meter-kilogram*

m·kg·sec: meter-kilogram-second*

ml: milliliter*

mL: millilambert*

ML: see "Material List"

MLA: Metal Lathe Association

MLD: median lethal dose

mm: millimeter*

mm^2: square millimeter*

mm^3: cubic millimeter*

MMEC: Materials Management Executive Committee

mmf: magnetomotive force*

mm Hg: millimeter of mercury (Torr)*

mmho: millimho*

MMI: Man-Machine Interface

m mol: millimole*

MMP: Materials Management Plan

MMS: Maintenance Management System

mMu: milli-mass-units*

MNS: see "Master Nuclear Schedule"

mo: month

Mod Center: Modification Center

mol: (1) mole*; (2) molecule, molecular*

molar: the number of moles of solute per liter of solution

mole: a quantity of a compound whose weight in grams is equal to the formula weight of the compound

molecular weight: see "formula weight"

molecule: (1) the smallest unit of a compound that retains all the properties of a compound; (2) a group of atoms held together by valence (electron) forces. A molecule is the smallest unit of a compound that can exist by itself and retain all its chemical properties.

mole %: mole percent*

mol. wt: molecular weight*

monitoring: periodic or continuous determination of the amount of ionizing radiation or radioactive contamination present in an occupied region, as a safety measure, for purposes of health protection or contamination control (see "radiological survey")

monthly: a time interval not to exceed six calendar weeks

MORT: Management Oversight Risk Tree

MOSTAB: Modular Stability Derivative Program

mov: metal oxide varister

mp: melting point*

MPa: megapascals*

MPA: (1) maximum probable accident; (2) Manufacturing Project Approval

MPBB: maximum permissible body burden

MPC: (1) see "Maximum Permissible Concentration;" (2) Maintenance Publication Coordinator

MPD: Maximum Permissible Dose

MPE: maximum permissible exposure

mph: miles per hour*

MPIF: Metal Powder Industries Federation

MPL: maximum possible loss

MPM: Maintenance Procedures Manual

M-Procedure: manufacturing procedure; a document prepared by Technical Writing at RF to define processes; contains either or both manufacturing and design information; included in the drawing set by callout on the Material List drawing; also known as an M-Document

MPS: (1) see "Master Program Schedule"; (2) Master Production Schedule

MQA: HS&E Manager of Quality Assurance; reports to the Director of HS&E and responsible for overall HS&E Quality Assurance

mr: milliradian*

mR: milliroentgen*

MR: Material Request

mrad: millirad*

MRB: see "Material Review Board;" consists of members from several plant organizations, to review an item, its proposed application, and determine what actions are required to upgrade the item. The Board makes its determinations based on applicable NWQA criteria.

MRCA: Midwest Roofing Contractors Association

mrem: millirem*

mrem/hr: millirem per hour*

MRP: (1) see "Manufacturing Resource Planning"; (2) Material Requirements Planning (software package)

M&S: Materials & Supply

m/s: meters per second

M_s: overturning moment

MSA: 1) Mangagement Science America (computer system); 2) Mine Safety Appliance

MS&C: Material Scheduling and Control

MSE: molten salt extraction

msec: millisecond*

m/sec: meter per second*

m/sec^2: meter per second squared*

MSEC: Mountain States Employers Council

MSR: molten salt reactor

MSRF: Modular Size Reduction Facility

MSS: Manufacturers Standardization Society of the Valve and Fittings Industry

Mt: megaton*

MT: (1) control number for secret machine tapes; (2) magnetic particle testing

MTAG: Manufacturing Technology Advisory Group

MTBF: mean time between failure

MTC: Maintenance (RF)

MTCE: maintenance

MTD: see "Manufacturing Technology Development"

MTM: Methods-Time-Measurement

MTR: (1) Material Transfer Receipt; (2) Material Transfer Report

MTTR: Mean Time To Repair

MUF: Material Unaccounted For

MULTIGA: abbreviation used on a Tool Order to refer to a multi-station gage

mV: (1) millivolt*; (2) multivolts*

MV: (1) megavolt*; (2) million volts*

MVA: megavolt-ampere*

mW: milliwatt*

MW: megawatt*

MWd: megawatt-days*

MWd/CT: megawatt-days per central ton*

MWd/MTU: megawatt-days per metric ton uranium*

MWdt/T: megawatt-days, thermal per ton*

MWe: electrical megawatt*

MWhr: megawatt-hours*

MWht: thermal megawatt-hours*

MWO: maintenance work order

MWsec: megawatt-seconds*

MWt: thermal megawatt*

Mx: maxwell*

n

n: (1) nano (prefix = 10^{-9})*; (2) neutron*

N: (1) newton*; (2) nitrogen; (3) north*; (4) nu (uppercase)

N: normal (solution; with numbers only, e.g., 0.5N)*

NA: (1) neutral axis in or out of plane of rotation; (2) not applicable

N_A: Avogadro's Number, 6.0×10^{23}

NAAMM: National Association of Architectural Metal Manufacturers

NAAQS: National Ambient Air Quality Standards

NACA: National Advisory Committee for Aeronautics

NACM: National Association of Chain Manufacturers

nano- (n): a prefix that divides a basic unit by one billion

nanocurie (nCi): one billionth part of a curie

NARM: National Association of Relay Manufacturers

Narrative Operating Log: a recorded sequence of operational events or functions performed during a shift period. The logs must have numbered pages and be kept in the various operating locations such as the Work Station or Control Room as defined by department management. This log is maintained by first level supervision or operating/support personnel as deemed appropriate by the group manager.

NASA: National Aeronautics and Space Administration

natural radiation: see "background radiation"

natural uranium: uranium as found in nature; contains 0.7 percent uranium-235, 99.3 percent uranium-238 and a trace of uranium-234

NAWAS: National Warning System

NBBPVI: National Board of Boiler and Pressure Vessel Inspectors

NBC: National Building Code

NBFU: National Board of Fire Underwriters

NBHA: National Builders' Hardware Association

NBS: National Bureau of Standards

NC: (1) numerical control; (2) normally closed (electrical contact or mechanical position, etc.)

N/C Apps: Numberical Control Applications

NCE: notice of completion

n/cm^2: neutrons per square centimeter*

NCMA: National Concrete Masonry Association

MCPWB: National Certified Pipe Welding Bureau

NCR: Nonconformance Report

NCRP: National Council on Radiation Protection and Measurements

NCS: National Communications System

NCSWDI: National Combination Storm Window & Door Institute

NDA: nondestructive assay

NDA & Matl Cont Ops: Nondestructive Assay & Material Control Operations

NDA&MC: Nondestructive Assay & Material Control

NDHA: National Direct Heating Association

NDT: Nondestructive Testing

NDT Ops: Nondestructive Testing Operations

NDT R&D: Nondestructive Testing Research & Development

NEC: National Electrical Code

neg.: negative

negative pressure check: a qualitative fit check where the respirator wearer covers the filter openings, inhales, listens and feels for inward air leakage around the facepiece seal, and holds the test for 5-10 seconds

negligible weight: any measurement less than half the reporting unit

NEMA: National Electrical Manufacturers Association

NEPA: National Environmental Policy Act

NESC: (1) National Electrical Safety Code; (2) National Energy Software Center

NEST: (1) Nuclear Emergency Search Team; (2) New Employee Safety Training

NET: new employee training

Net Services: Network Services

neutron: an uncharged elementary particle with a mass slightly greater than that of the proton, and found in the nucleus of every atom

neutron capture: the process in which an atomic nucleus absorbs a neutron

neutron chain reaction: a process in which some of the neutrons released in one fission event cause other fissions to occur; three types of chain reactions:

(1) nonsustaining chain reaction - an average of less than one fission is produced by the neutrons released by each previous fission (reactor subcriticality)

(2) sustaining chain reaction - an average of exactly one fission is produced by the neutrons released by each previous fission (reactor criticality)

(3) multiplying chain reaction - an average of more than one fission is produced by the neutrons released by previous fission (reactor supercriticality)

neutron radiation: heavy particle with high penetration shielded by plastic, concrete, and water; health effects are external, similar to gamma and x-rays

New Material Laboratory Test (NMLT): a unit or component returned from Pantex for both non-destructive and destructive testing; converted into a full component weapon; provides the initial information used by the Design Agencies to determine the stockpile integrity of a weapon program

NFC: National Fire Code

NFPA: (1) National Fire Protection Association; (2) National Fluid Power Association

NFR: no further requirement

N&FS: Nuclear & Facilities Safety

NGPA: Natural Gas Processors Association

NHAMA: National Hose Assemblies Manufacturers Association

NHPMA: Northern Hardwood and Pine Manufacturers Association

NIJFCM: National Institute of Jig and Fixture Component Manufacturers

NIM: Nuclear Instrument Module

NIOSH: National Institute of Occupational Safety and Health

NLGI: National Lubricating Grease Institute

NLMA: (1) National Labor Manufacturers Association; (2) National Lumber Manufacturers Association

nm: nanometer*

N-m (or N·m): newton meter*

NM: nuclear material

NMA: (1) National Management Association (management chapter); (2) Nuclear Materials Accountability

NMC: Nuclear Materials Control

NMC&A: Nuclear Materials Control and Accountability

NMDTR: Nuclear Material and Drum Transfer Report

NMLT: (1) see "New Material Laboratory Test"; (2) Nuclear Materials Laboratory Testing (new materials)

NMM: Nuclear Materials Management

NMMSS: Nuclear Materials Management and Safeguards System

NMR: nuclear magnetic resonance*

NMS: Nuclear Materials Safeguards

NMTBA: National Machine Tool Builders' Association

NMWIA: National Mineral Wood Insulation Association

No.: number*

NO: normally open (electrical contact or mechanical position)

NO_2: nitrogen dioxide

noble-gas: elements that display chemical stability characterized by 2 electrons in the outer shell of helium and 8 electrons in the outer shells of neon, argon, krypton, xenon and radon

NOFMA: National Oak Flooring Manufacturers' Association

NOGOGA: abbreviation used on a Tool Order to refer to a not go gage

NOL: normal operational loss

nonconformance: a deficiency in characteristic, documentation or procedure that renders the quality of an item or activity unacceptable or indeterminate. Examples of nonconformance include physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed specifications, drawings, processing, inspection, or test procedures.

nondestructive measurement/assay (NDA): a measurement involving no chemical or physical change in the material measured

nondestructive testing: RF group from which representatives provide test information to the Product Engineer to use in preparing the Sequence of Operations; also review and concur with the completed sequence; when associated with Producibility Assessments, assist in areas of equipment, fixturing, special and critical process definition, process capability and any necessary design considerations

nonfriable asbestos: any material containing asbestos that cannot be crumbled by hand. Transite, vinyl asbestos floor tile, or premolded asbestos pipe insulation that is in good repair are examples of nonfriable asbestos. These materials are hazardous only when made friable as by cutting or sanding with a power tool.

non-functional non-conforming condition: any non-conformance which does not affect the intended function of a Modification Center product, but does not conform exactly to SNLA drawings, specifications or procedures; must be documented by Modification Center Production and verified by Quality Engineering 444/883 in the Records of Assembly or Records of Refurbishment, but can be accepted by Modification Center Manufacturing Engineering without formal deviation by SNLA; formal deviation will be at the discretion of the Program Manager, or designee

non-hazardous work: work where only accidental system failure or gross human error would result in injury

Nonnucl Jng: Nonnuclear Joining

Nonnucl Mfg Fac: Nonnuclear Manufacturing Facility

Nonnucl Proj: Nonnuclear Projects

non-radioactive: those having a health hazard rating of "4" in the Hazardous Material Handbook

nonrecoverable residues: materials that are determined to be equal to or less than the Economic Discard Limit (i.e. waste)

non-routine surveys: surveys performed as necessary to support plant evaluations, work evaluations, and less than normal conditions

Nonuran Comp: Nonuranium Components

normal operating lockup: the long term application of lock(s) by the equipment owner or under the authorization of the equipment owner to secure a normal system operating mode for safety or for other reasons. Normal operating lockups may be utilized on any equipment or system including the plantwide systems. Specific approval by Industrial Safety is required for a normal operating lockup of electrical systems.

N_p: neper (napier)*

NPDES: National Pollutant Discharge Elimination System

NPMA: Northern Pine Manufacturers' Association

NPVLA: National Paint, Varnish and Lacquer Association

NQA-1: Nuclear Quality Assurance Level 1

NQAPO: Nuclear Quality Assurance Program Office

NRC: (1) Nuclear Regulatory Commission; (2) National Response Center

NRMCA: National Ready-Mixed Concrete Association

NRT: National Response Team

NSA: (1) National Slag Association; (2) National Standards Association

NSC: National Safety Council

nsec: nanosecond*

NSGA: National Sand and Gravel Association

NSPS: New Source Performance Standards

NTIS: National Technical Information Service

NTS: (1) Nevada Test Site; (2) not-to-scale

nuclear disintegration: see "decay, radioactive"

nuclear energy: the energy liberated by a nuclear reaction (fission or fusion) or by radioactive decay

nuclear fission: see "fission"

nuclear force: a powerful short-ranged attractive force that holds together the particles inside an atomic nucleus

Nuclear Material (NM): see "Special Nuclear Material" (SNM)

nuclear materials accountability: that part of the safeguards program encompassing the procedures and systems to (1) perform nuclear material measurements, (2) verify the location and quantities of nuclear material through physical inventories, (3) maintain records and provide reports, (4) perform data analysis to account for nuclear material and detect losses and (5) help investigate and resolve apparent losses of nuclear material

nuclear materials control: that part of the safeguards program encompassing management and process controls to (1) assign and exercise responsibility for nuclear material; (2) maintain vigilance over the material; (3) govern its movement, location, and use; (4) monitor the inventory and process status, detect unauthorized activities for all nuclear material; and (5) help investigate and resolve apparent losses of nuclear material

nuclear radiation: see "radiation, nuclear"

nuclear reaction: the process of inducing a disintegration of the nucleus of an atom

nuclear reactor: a device for sustaining a slow fission reaction and producing heat used to generate electricity

nucleon: common name for a constituent particle of the atomic nucleus; at present, applied to protons and neutrons, but may include any other particles found to exist in the nucleus

nucleus (atomic nucleus); nuclei (plural): the small, central, positively charged region of an atom that carries essentially all the mass. Except for the nucleus of ordinary (light) hydrogen, which has a single proton, all atomic nuclei contain both protons and neutrons. The number of protons determines the total positive charge, or atomic number; this is the same for all the atomic nuclei of a given chemical element. The total number of neutrons and protons is called the mass number (see "isotope").

nuclide: a general term referring to all known isotopes, both stable (279) and unstable (about 5000), of the chemical elements

Nucl Jng: Nuclear Joining

Nucl Proj: Nuclear Projects

NUWA: nuclear weapons accident

NUWAX: nuclear weapons accident exercise

nv: neutrons per unit volume x velocity (or flux)*

nvt: neutrons per unit volume x velocity x time (or dose)*

NWD: nuclear weapon data

NWMA: National Woodwork Manufacturers Association

NWPMA: National Wooden Pallet Manufacturers Association

NWQA: Non-Weapons Quality Assurance

NWWA: National Water Well Association

O

O_3: ozone

o: omicron

OA: office automation

OAHP: (State of Colorado) Office of Archaeology and Historic Preservation

OBA: Operating Basis Accident

objective evidence: any documented statement of fact, other information, or record, either quantitative or qualitative, pertaining to the quality of an item or activity, based on observations, measurements, or tests which can be verified

obs: obsolete

observation: an opinion regarding a deficient condition not covered by a specific requirement; may also describe a procedure, practice or specification that can be improved; may be informational in nature

OC: on center*

occasional radiation worker: an individual who does not routinely work with or in the proximity of radiation generating devices or radioactive materials, but whose duties may occasionally bring him/her into areas where radiation exposure may occur

OD: outside diameter*

O.D.: optical density*

ODGA: abbreviation used on a Tool Order to refer to an OD gage

ODIS: Onsite Discharge Information System

ODMA: abbreviation used on a Tool Order to refer to an OD master

Oe: oersted*

OEP: Office of Emergency Preparedness

o/f: oxidizer-to-fuel ratio*

OFCCP: Office of Federal Contract Compliance Programs

Offsite Insp Shop: Offsite Inspection Shop

Offsite Mach Shop: Offsite Machine Shop

OGI: Oil & Gas Conservation Commission (CDH)

ohm·cm: ohm-centimeter*

OHP: Operation Health Physics (RF)

OIC: Opportunities Industrial Center

OJT: see "On-the-Job Training"

OMA: Office of Military Applications

online: refers to a computer system which communicates and updates files immediately, as opposed to batch or overnight processing

On-the-Job Training (OJT): hands-on training conducted and evaluated in the work environment by qualified individuals

OP: order point

op. cit.: opere citato (in work cited)*

operable: when a component or system is capable of performing its intended function

operating: when a component or system is performing its intended function

operating personnel: those individuals in Production Operations, Plutonium Operations, and Quality Engineering and Control with the responsibility for operating production equipment and processes on a routine production basis

operational check: an operational check refers to verifying that the check source produces a detectable response in the instrument when the detector window is placed in contact with the check source

operational readiness review: review of a proposed facility or process system prior to startup to evaluate the capability of the equipment, personnel, and management control systems to fulfill system's functional and safety objectives. This does not replace or conflict with, but shall be used prior to a Production Readiness Review.

operational requirements: the end results which a project should achieve, including needs for operations, maintenance, safety, security, safeguards, quality assurance, utility requirements

Operational Requirements Document (ORD): a detailed question-and-answer list of items completed by the User, which should be considered prior to the start of definitive design. The level of detail must be adequate for the User, Facilities Engineering (FE), and Facilities Project Management (FPM) to approve so that design can be initiated.

Operational Safety Analysis (OSA): a written safety review which outlines the safety hazards involved in an operation, the controls of those hazards, and the responsible personnel (see HS&E 2.03)

Operational Safety Requirements (OSRs): those requirements which define the conditions, safe boundaries and bases thereof, and management or administrative controls required to assure the safe operations of a facility; purpose is to assure that the operational status of the facility and safety systems remains consistent with the assumption and provisions of the Safety Analysis Report. OSRs include Safety Limits, Administrative Safety Controls, Limiting Conditions for Operation, Surveillance Requirements, Design Features, and Administrative Controls; agreements with the Department of Energy (DOE) and any changes to which require DOE/RFO approval. OSRs' remedial action and reporting requirements are stated in the facilities Final Safety Analysis Report.

operative management: the management of individuals; usually the first contact level of management for employees. Operative management is the foreman (where bargaining unit employees are involved) or the immediate manager.

OPM: Operations, Procedures & Management (category)

Op Safety: Operational Safety

OPSEC: Operation Security

Org Dev: Organization Development

orientation: training which provides familiarization with a subject

original facilities drawing: a facilities drawing which is not a copy, and consists of mylar, magnetic, or other media

ORM: Operations Risk Management

ORNL: Oak Ridge National Laboratory

ORR: Operational Readiness Review

ORR Committee: an ad hoc committee appointed by the responsible operating department manager to conduct the Operational Readiness Review

OSA: Operational Safety Analysis

OSD: Office of the Secretary of Defense

OSHA: Occupational Safety and Health Administration

OSR: (1) offsite receipts; (2) On-Site Representative (Colorado)

OSS: (1) offsite shipments; (2) Office of Safeguards & Security

OS&Y: outside screw and yoke

OTC: Offsite Training Center

OUO: official use only

out-of-service equipment: (1) equipment that has been permanently taken out of operation and is planned to be excessed; does not include standby equipment; (2) for system and process area oxygen analyzers, these are considered to be out of service when the instrument is determined to be malfunctioning until it is repaired and returned to service for OSR requirements (LCO/SL/ASC/SR)

out-of-tolerance: pertains to those conditions that result in non-compliance with the OSR, but requires initiation of remedial actions to achieve compliance within the condition restoration time or to safely terminate operations. Out-of-tolerance conditions are not considered violations of OSRs, provided that remedial actions as specified in the OSR, are being taken to achieve compliance with the OSR, or operations are safely terminated.

owner: the person (typically a supervisor) who is responsible for handling, storing, and/or using a chemical. The owner is usually also responsible for the acquisition and/or disposal of the chemical.

oxidation: the removal of one or more electrons from an atom or ion

oxidation number: positive and negative numbers assigned to the elements in chemical formulas according to a set of rules

oz·ft: ounce-foot*

oz·in.: ounce-inch*

p

P2: Project 2 (see "Qwiknet")

p: (1) page; (2) pico (prefix = 10^{-12})*

P: (1) peta (prefix = 10^{15})*; (2) poise*; (3) rho (uppercase)

Pa: pascal*

pA: available wind power*

PA: (1) Public Address; (2) Plant Air; (3) project administrator

Packaging Program: a group within Program Management which leads and coordinates efforts required to design, test, evaluate, and obtain certification for containers for radioactive and other hazardous materials, except wastes, and to oversee procurement, inspection, and use of these containers in accordance with DOE, DOT, and other applicable regulations

PACS: Personnel Access Control System

PAR: Process Automation and Robotics

parent: a radionuclide that upon radioactive decay or disintegration yields a specific nuclide (the daughter)

particle: a minute constituent of matter with a measurable mass, such as a neutron, proton, or meson

parts per million (ppm): parts (molecules) of a substance contained in a million parts of air (or water) by volume

part tree: a schematic which depicts a top-down part/component structure from the top-level assembly down to the lowest level component or material required to build the assembly product

Pa·sec: pascal second*

passenger and burden-carrier: small industrial vehicles used for transporting persons or cargo in and around industrial plants; often referred to as "scooters" or "golf carts"

passive systems: systems that contain no moving parts, such as concrete pads, support brackets, conduit, walls, etc.

PAT: project acceptance transfer

PATMI: Power-Actuated Tool Manufacturers' Institute

PATRAM: packaging and transportation of radioactive materials

PATS: obsolete - Product Acceptance Technical Support; see "Inspection Technical Support"

Payroll & Cost Acctg: Payroll & Cost Accounting

Pb: lead

PBA: Process Balance Area

P&CM: Project & Construction Management

PC: (1) personal computer; (2) programmable controller; (3) Production Control

PCB: (1) polychlorinated biphenyl; (2) printed circuit board

PCD: (1) see "Program Control Document;" (2) Process Chemistry Development

PCE: tetrachloroethylene

pcf: pounds per cubic foot*

pCi: picocurie

PCI: Prestressed Concrete Institute

pCi/g: picocuries per gram

pCi/l: picocuries per liter

PCV: Pressure Control Valve

PCW: Process Cooling Water

PD: preliminary design

PDAS: Process Data Acquisition System

PDB: People Database (human resource)

PDCA: Painting and Decorating Contractor of America

PDCM: see "Product Definition and Configuration Management"

PDHE: project design hour estimate

PDI: Plumbing and Drainage Institute

PDR: (1) preliminary design review; (2) Property Disposal Report

p-drawing: Rocky Flats-controlled drawing

PE: (1) Project Engineer; responsible for providing complete engineering package within the engineering schedule and budget of assigned projects; (2) Product Engineer; (3) Program Engineer

PEC: part evaluation cycle

PEI: Porcelain Enamel Institute

penetrating radiation: radiation that can travel long distances and penetrate the body, impart some of its energy, and then continue at a lower energy

performance-based training: a formal, systematic approach to training which is based on tasks and related knowledge and skills required for competent job performance

performance test: (1) a test of a system or component to verify that required performance characteristics can be achieved, to detect any abnormal performance characteristics, and to determine the effect of maintenance and operating activities on equipment performance; (2) a check of the equipment performance in order to determine that the equipment is operating to specifications. Performance tests are generally used where it is critical that the equipment be in proper operating condition at all times.

Perimeter Security Zone (PSZ): the area of the Rocky Flats Plant which is located within several physical security boundaries and in which most of the SNM is used, processed, and stored

periodic table (periodic chart): an arrangement of chemical elements in order of incresing atomic number. Elements of similar properties are placed one under the other, yielding groups or families of elements. Within each group, there is a variation of chemical and physical properties, but in general there is a similarity of chemical behavior within each group.

peripheral hardware: any or all of the following used in conjunction with a glove, boot, or bag: outer retaining ring, inner ring, shielded port cover

permissive: the parameter value(s) required to allow the initiation of a primary function

Permit Requester: any responsible user who initiates an Excavation Permit (RF 46635) request

personnel monitoring: the determination of the degree of radioactive contamination on individuals, using survey meters, or the determination of radiation exposure received by means of dosimetry devices

PES: Production Engineering Support

pf: power factor*

pF: picofarad*

PFD: process flow diagram

PFT: Piping Fabrication Traveler

pH: hydrogen ion concentration*

pH: (1) the negative of the logarithm of the hydrogen ion concentration of a solution; water solutions are acidic below pH 7 and basic above pH 7; the lower the pH, the more acidic the solution, and vice versa; (2) a mathematical expression used to express the molar concentraiton of H+ in solution (pH=-log[H+])

PHA: pulse height analyzer

photon: a quantum (or packet) of energy emitted in the form of electromagnetic radiation. Gamma rays and X-rays are examples of photons.

physical hazard: a chemical having the ability to cause or promote a fire, explosion, or uncontrolled chemical reaction by virtue of its being flammable, a combustible liquid, pyrophoric, explosive, and oxidizer, unstable (reactive), water-reactive, or a compressed gas.

physical inventory (PI): (1) the actual physical act of accounting for nuclear material through various preparatory and measurement activities performed according to written procedures; (2) the quantity of material which is determined to be on hand by physically ascertaining its presence using techniques which include sampling, weighing, and analysis

Phys Met: Physical Metallurgy

Phys Met Lab: Physical Metrology Laboratory

PI: Perlite Institute

pico- (p): a prefix that divides a basic unit by one trillion

picocurie (pCi): one trillionth part of a curie

PID: see "Planning Information Document"

PIDAS: Perimeter Intrusion Detection and Assessment System

pig: a container (usually lead) used to ship or store radioactive materials. The thick walls protect the person handling the container from radiation. Large containers are commonly called "casks."

Pilot Production (PP): a production agency pre-FPU phase designed to check out procedures, facilities and readiness for manufacture of WR product; brings to a close Phase 4 activities; consists of two phases: (1) Process Prove-In (PPI), and (2) Tool-Made Sample (TMS), Engineering Evaluation (EE), or Qualification (TMS for SNLL/SNLA, EE for LLNL, and Qualification for LANL).

Pilot Production Program Definition (PPPD): a document prepared by the design agencies that, with DOE-AL authorization, establishes pilot production quantities for a number of testing, qualification and prove-in activities

pin shot: a pit contour test in which mock-up material is used in conjunction with a pin dome, placed on the interior of the assembly using as many as 400 pins, to detect the implosion characteristics of the configuration

PI&S: Product Integrity & Surveillance

PL: Property Loss (category)

PLA: Pulverized Limestone Association

Planning Information Document (PID): a programmatic guidance document published, in most cases, annually by DOE/AL during Phase 2 to describe a new, evolving weapon program; includes information on the program authorization and plan, phase dates, warhead systems descriptions and requirements, plus responsibility assignments

planning schedule: schedule issued during Phase 3 by the Weapon Programs Division as part of the AL Program Management Document

Plan-of-the-Day (POD): a meeting held each working day to discuss the current production building activity schedule, update the Activity Schedule and set priorities. Attendees include representatives from Production, Safety, Quality, Construction, Maintenance, Safeguards, and others, as deemed necessary by the Building Manager.

Plant Prot: Plant Protection

Plant Safety Program: the Rocky Flats program which establishes and/or implements the guidelines and requirements which ensure safe operation of the facility; required by DOE Orders and implemented by the HS&E Manual

Plant Supp Labs: Plant Support Laboratories

plantwide systems: those systems which provide services to several buildings and areas; include Plant Power, Utilities (water, steam, sewer), Fire Protection Systems, and Alarms.

PLATGFIX: abbreviation used on a Tool Order to refer to a plating fixture

PLC: Programmable Logic Controller

Plenum Test & Cert: Plenum Testing & Certification

Plng: planning

plutonium (Pu): a heavy, radioactive, metallic element with the atomic number 94; its most important isotope is fissionable Pu-239, produced by neutron irradiation of uranium-238; produced artificially by neutron bombardment of uranium; emits alpha, beta, gamma, and neutron radiation

Plutonium (Pu) Operations: see "Pu Operations"

PM-10: particulate matter, 10 micrometers or less in diameter

p.m.: post meridiem (after noon)*

PM: (1) photomultiplier tube*; (2) project manager; (3) see "Program Management"

PME: Plant Maintenance Engineering

PML: (1) probable maximum loss; (2) Physical Metrology Lab; (3) the bill of materials required to complete the construction/installation documented in the construction design package for Maintenance; includes both items requisitioned by FE and those to be obtained by Maintenance. FE-requisitioned items are so noted; does not include miscellaneous construction materials such as nuts, bolts, screws, washers, gaskets, clips, hooks, etc., or expendible supplies such as tape, plastic, gloves, etc; not used on projects that are contracted to others for construction; a formal part of the Maintenance construction design package.

PMM: Program Management Manual

PMO: (1) Preventive Maintenance Order; (2) Preventive Maintenance Organization

PMPR: Project Management Progress Report

PMS: (1) Preventive Maintenance System; (2) Performance Measurement System

pneumatic valve full-travel pressure: the value of operating medium pressure required to move a pneumatic valve to the full-traveled position upon valve actuation

pneumatic valve lift-off pressure: the valve of operating medium pressure

PNL: Pacific Northwest Laboratories

PO: (1) production order; (2) purchase order

POB-2: a section in the Production Operations Procedure Manual which lists certified metalworking materials and processing materials approved for use on WR program materials

POC: products of combustion

pocket dosimeter: a small ionization detection instrument that indicates radiation exposure directly or indirectly; requires an auxiliary charging device

POD: (1) see "Proof of Development"; also (2) Production Operations Division, DOE/AL

pOH: a mathematical expression used to express the molar concentration OH- in solution (pOH = - log [OH-])

POL: Polaroid prints (or negatives)

polymer: a substance composed of very large molecules formed by the joining together of many small molecules of the same type

POP: see "Program Operations Planning"

PORS: see "Process Operations Route Sheet"

portable crane: a crane that can be moved from location to location between uses or storage; a crane not permanently attached to a component or a facility

POS: (1) see "Process Operations Sheet;" also (2) "Production Operation Sheet"

positive pressure check: a qualitative fit check where the respirator wearer covers the exhalation valve, gently exhales, listens and feels for outward air leakage around the facepiece seal, and holds the test for 5-10 seconds

positron: particle equal in mass, but opposite in charge, to the electron; a positive electron

powered industrial truck: a mobile power-driven vehicle used to carry, push, fill, lift, stack, or tier material

P&PD: see "Production and Planning Directive"

P&PE: see "Production and Process Engineering"

pp: pages

PP: see "Pilot Production"

PPA: prior period adjustment

PPAM: Plant Publications Administration Manual

ppb: parts per billion*

ppd: pulse per degree*

PPGD: see "Production Planning Guidance Document"

PPI: see "Process Prove-In"

ppm: parts per million*

PPP: Pilot Production Program

PPPD: see "Pilot Production Program Definition"

PPR: Part Process Report

PPRC: Plant Protection Requirements Checklist

PP&S: see "Program Planning and Support"

pps: pulses per second*

PQE: Procurement Quality Engineering

PQT: Product Qualification Team

Pr: Prandtl number*

PR: (1) purchase request; (2) procurement request

P_R: rated power*

precautionary clothing and equipment: company-issued clothing and equipment which workers may be required to wear in controlled areas; may include items such as coveralls, safety shoes, underwear, etc; worn as a precautionary measure to avoid contaminating personal clothing or a worker's skin in case there is an inadvertent release of contamination; not intended to substitute for anti-contamination clothing and not to be used as anti-contamination clothing

precautionary monitoring: monitoring performed to confirm a portion of the body has not become contaminated while working within a radiologically controlled area

precipitation: the deposit of an insoluble compound in a solution as a result of a chemical reaction

precision: a generic concept employed to describe the dispersion of repeated measurements with respect to a measure of central tendency, usually the mean; sometimes measured by repeatability and reproducibility. Repeatability refers to the within-group dispersion to measurement, while reproducibility refers to the between-group dispersion; term often accompanying accuracy.

predevelopment engineering: DOE Phases 1 and 2

preliminary design (Title I) review: ensures that preliminary design work is progressing in accordance with the design criteria and other design inputs. The Project Engineer (PE) distributes copies of preliminary design drawings, layout, outline construction specification, procurements specifications, and any other pertinent data to concerned parties.

preliminary development: initial tests and activities, typically using product mock-ups, to identify important manufacturing process variables and establish baseline process parameters

prelist: a document produced by the Safeguards Accountability Network (SAN) which lists all items in an MBA at the beginning of inventory

PREPP: Processing Experimental Pilot Plant

preproduction: (1) Phase 4, Production Engineering; (2) activities after receipt of Advanced Engineering Release (AER) or similar Design Agency release which affects systems, subsystems or components that are expected to proceed into production

press.: pressure

preventive maintenance: predictive, periodic, or planned maintenance actions performed prior to equipment breakdown or to prevent equipment breakdown; distinction between predictive, periodic, and planned maintenance is as follows:

predictive: methods used to analyze and predict equipment performance so that planned action can be taken to correct abnormalities. Methods include, for example, vibration analysis or in-service inspection.

periodic: action taken on a routine basis on equipment to prevent breakdown; actions include, for example, lubrication, inspection, and cleaning

planned: maintenance performed prior to equipment failure; can be initiated by predictive or periodic maintenance results, by vendor recommendation, or by experience; includes items such as replacement of bearings as indicated from vibration analysis and replacement of known life span components

Preventive Maintenance Order (PMO): a means of identifying equipment which requires scheduled, routine periodic maintenance

priority channel: a designated switch position on a process area oxygen analyzer which is to be in the "ON" position (toggle switch up) at all times, except when manually sampling other channels. The purpose of the "PRIORITY" channel is to continuously monitor a glovebox with higher-risk pyrophoric plutonium, or a common exhaust header for multiple gloveboxes that do not have higher-risk pyrophoric plutonium.

PRMP: Plutonium Recovery Modification Project

probe window: the face or detection side of the probe identified by a removable mylar/cardboard screen

Proc Chem Supp: Process Chemistry Support

Proc Cont Comp Ops: Process Control Computer Operations

Proc Cont Ops: Process Control Operations

procedure: (1) a document which outlines actions and responsibilities (involving more than one RF directorate) required to implement systems designed to ensure requirements are met; (2) a document that specifies or describes how an activity is to be performed; see "M-Procedure"

Proc Equip Des: Process Equipment Design

process area oxygen analyzer: an instrument with an oxygen sensor(s) monitoring the glovebox atmosphere(s) and alarming at 5% oxygen by volume; located in the process area and may monitor one or more gloveboxes

process balance area (PBA): an area within an MBA which has been identified as a distinct subset and for which a balance may be taken at any time

process capability: the limits within which a tool or process operates, based upon minimum variability as governed by the prevailing circumstances

process development: a formal part of a Program Plan; develops production processes (quality, cost efficiency, equipment utilization, and equipment procurement) capable of producing WR-quality product

Process Operations Route Sheet (PORS): a part routing which lists all processes in terms of operation numbers, operation names, procedure references, and production responsibilities; prepared and maintained by Production Processing; changes to a PORS are requested on a Request for Document Change (RDC), Manufacturing Change Request (ECR) or Engineering Order (EO); see "Shop Traveler"

Process Operations Sheet (POS): detailed work instructions for processes not covered by M-Procedures; prepared and maintained by Production Processing; changes are requested on a Request for Document Change (RDC), Manufacturing Change Request (MCR) or Engineering Order (EO)

process procedure: a procedure issued by Technical Writing, providing instructions for process operations, e.g., welding

Process Prove-In (PPI): a statistically significant population of product, manufactured using WR production conditions; conducted to prove to the Design Agency that a process is repeatable and dependable for WR production. Documentation must be in nearly final form (e.g., a D-Procedure or proposal may be acceptable, but in that case if the product is to be used for WR production, deviation may be required); a plant-initiated proof-of-readiness activity for demonstrating product is ready for production; emphasis on demonstrating consistency over production variables, e.g., personnel, work shifts and equipment

Process Technology Development (PTD): see "Manufacturing Technology Development"

Proc Matl Cont: Process Material Control

Proc Ops: Process Operations

procurement document: purchase requisitions, purchase orders, drawings, contracts, specifications, or instructions used to define requirements for purchase

Prod Apps: Production Applications

Prod Def: Product Definition

Prod Engrg: Product Engineering (obs)

Prod Ops: Production Operations

Prod Proc: Production Processing

Prod Sched & Cont: Production Scheduling & Control

Prod Supp Lab: Production Support Laboratories

producibility assessment: (1) the process of reviewing and evaluating the design requirements of a component or assembly to determine: the degree of confidence that the item can be produced with the quality required, on schedule and within budget, and/or assembled; assigning a producibility code to each item; defining the producibility problems where they are identified; and developing planned or suggested actions to resolve the problems; (2) the result of the evaluation process

producibility code: a method for categorizing the levels of producibility

product: material manufactured at Rocky Flats, not meeting the definitions of waste, scrap or residue; include vendor material which must be repackaged, either for use onsite or for shipment

Product Acceptance Technical Support (PATS): obsolete; see "Inspection Technical Support (ITS)"

product configuration control: configuration management system(s) for controlling and tracking product configuration through the product stream

Product Definition & Configuration Management (PDCM): group assigned to Program Planning and Support to develop and maintain plant product engineering configuration systems; also provides Specification Exception Report (SXR) processing; also creates and maintains WR drawings and support specifications

Product Engineer (PE): the individual in Program Management responsible for coordinating all technical and scheduling aspects for an identifiable weapon product

Production and Planning Directive (P&PD): (1) document prepared and distributed by the Office of Military Applications, DOE/Hq and providing yearly stockpile pegpoints from which new build quantities and retirements are determined; preceded by "draft" stockpile memoranda which contain essentially the same data as a P&PD, but are used for planning "what if" cases; P&PDs are derived from the Nuclear Weapons Stockpile Memorandum that has joint DOE/DOD agreement prior to being issued as the Presidential Authority for the nuclear weapon posture

Production and Process Engineering (P&PE): the salaries, fringe benefits, other manpower costs, and supplies and services associated with industrial engineering, tool engineering, design engineering, product engineering and process engineering support for a specific weapon system; process engineering support replaces process development after the completion of proof-of-development units

production and stockpile maintenance: DOE Phases 5 and 6; see P&C Handbook 3.1, Sections 2.5 and 2.6

Production Control (PC): group responsible for establishing a Stockpile Record Sheet for each shipping level component or assembly

production engineering: DOE Phase 4; see P&C Handbook 3.1, Section 2.4

production equipment: equipment or processes utilized for the (1) casting, fabrication, assembly, testing or inspection of product, or (2) recovery or purification of plutonium or plutonium alloys and the treatment or handling of wastes or residues containing plutonium alloys

production life: the period from the beginning of Phase 3 through the end of Phase 6

Production Planning Guidance Document (PPGD): document prepared by Program Operations Planning based on AWLPG Schedule information, providing eight-year schedule information on all WR deliverables by program and component; issued to RF management for use in resource planning

Production Program Definition (PPD): implements the production and retirement assignments made by the Assistant Manager for Plans and Resources; published as five separate documents

production readiness: said of a manufacturing facility which is prepared to meet the requirements of a weapon program or a process improvement project

Production Readiness Review (PRR): a weapon program phase activity which assesses the adequacy of program/project planning, time-phased resource needs, and the preparedness of the manufacturing areas to meet the requirements of a weapon program or a process improvement project

product tree: a graphic representation of the manufacturing steps required to convert a raw material into shippable entity, depicting each process step from raw material, to piece part, to subassembly, to final assembly

program charter: the document which describes a program's scope of authority, its responsibilities and accountabilities; prepared by the Program Manager, signed by the President of Rocky Flats, and published in the Program Plan

Program Control Document (PCD): the guidance document which accompanies the MIR Call Letter from DOE/AL, containing extensive weapon program information, including general programmatic guidelines, executive summaries, program milestones and schedules

program feasibility study: DOE Phase 2; a study warranted by the results of Phase 1 (Weapon Conception); see P&C Handbook 3.1, Section 2.2

Program Management (PM): (1) the directorate responsible for managing War Reserve (WR), related programs, and Special Order Work (SOW) in support of Design Agencies/National Laboratories, DOE and other agencies, including the engineering and other technical support activities necessary to WR production; (2) the process of identifying, planning, organizing, directing, and controlling the combined efforts of program and functional organizations to accomplish the objectives of each program, including the delivery of identifiable end products to DOE within specified costs and schedules

Program Manager: (Prog Mgr) person responsible for meeting the requirements and objectives of specific programs; determines and defines the scope of work, approves budgets, provides program plans, and schedules and monitors the performance of functional organizations who do the actual work

Program Operations Planning (POP): (1) the group within Program Management (PM) which provides Interproject (IP) schedules to meet requirements of the other plants within the Weapons Production Complex; (2) the operations group in PM responsible for preparation and maintenance of the IP Schedule, of contractor IP schedules, of Budget Workload Planning Forecast and Production Planning Guidance; for reporting schedule status information to management; for DOE and integrated contractors; for RFP liaison on all WR IP scheduling activities; and for interfaces with DOE and integrated contractors on matters pertinent to WR IP Schedules

program plan: a complete definition of a program's (proposed work) scope, goals, and objectives to be used as a basis for directing and controlling the program

Program Planning & Support (PP&S): the group within Program Management, consisting of Product Definition and Configuration Management; Systems Engineering, Technical Writing; Program Operations Planning; Packaging Program; provides required technical and administrative support to WR programs and provides systems analysis and other technical, administrative, and management support for Program Management and Rocky Flats

Project Design Hours Estimates (PDHE): an estimate of the total number of engineering hours required to complete a project from the point of starting definitive engineering through project construction, acceptance testing, and closeout

Proj Ops: Project Operations

prompt critical: an essentially uncontrolled condition in which the reactor period is determined by prompt neutrons, and the reactor flux increases extremely rapidly

proof-of-design project: any engineering project that meets one or more of the following criteria: (1) new equipment and process designs that must be connected to existing Rocky Flats equipment and processes whose as-built condition is inadequately documented; (2) development of a new first-of-a-kind, custom designed equipment or process; (3) off-site vendor installation, development or SO testing of first-of-a-kind equipment or process systems using vendor's drawings; (4) one-of-a-kind prototype equipment or process systems that will never be used for production purposes; (5) supplied air work where design changes, the probability of which is high, must be made while personnel are in supplied air suits.

Proof of Development (POD): (1) Phase 4 activity conducted just before PPI or its equivalent; (2) a statistically significant family of product, manufactured using production facilities over the identified acceptable range of process parameters, to confirm results identified during WR development; (3) focuses primarily on starting and testing the developed processes and manufacturing sequence in production; (4) a group of components run through the entire manufacturing sequence; during POD, all equipment and operations are conducted under WR conditions and must meet WR acceptance specifications; draft documentation is acceptable

propagation of variance: the determination of the value to be assigned as the uncertainty of a given quantity using mathematical formulas for the combination of errors. Variance propagation involves many considerations, and the choice of formulas for computing the uncertainty depends upon the functional relationships of the measurement parameters involved.

proportional counter: an instrument in which an electronic detection system receives pulses that are proportional to the number of ions formed in a gas-filled chamber by ionizing radiation

proposal: a new drawing or procedure presented to the Design Agency for approval; may be used for PPI processing; product made to a proposal must be deviated; after Design Agency approval, the procedure is issued as an M-procedure

protected area (PA): an area encompassed by physical barriers (e.g., walls or fences), subject to access controls, surrounding a Material Access Area, and meeting the standards of DOE Order 5632.2A

protection factor: the degree of protection provided by the proper fit and use of respiratory protective equipment

protective function: an automatic protective actuation that is initiated when an unsatisfactory condition is reached

PROTECTR: abbreviation used on a Tool Order to refer to a protector

pro tem: pro tempore (temporarily)

proton: a fundamental particle of matter, located in the nucleus of an atom, with a single positive electrical charge and a mass approximately 1847 times that of the electron; the atomic number of an atom is equal to the number of protons in the nucleus (see "atomic number")

PROVE: Plutonium Recovery Option Verification Exercise

PRP: Plutonium Recovery Project

PRPE: plutonium recovery process engineering

PRR: see "Production Readiness Review"

PRV: pressure relief valve

PR&WPE: Plutonium Recovery & Waste Proc Engr

PS: Plant Security

PSAR: Preliminary Safety Analysis Report

PSC: (1) Personnel Status Change (form); (2) project status control

PSCS: Plant Security Central Station

psi: pounds per square inch*

psia: pounds per square inch absolute*

psid: pounds per square inch differential*

psig: pounds per square inch gage*

PSL: Process Simulation Laboratory

PSV: Pressure Safety Valve

PSWBS: Project Summary Work Breakdown Structure

PSZ: perimeter security zone

PT: (1) Plant Training; (2) liquid penetrant testing; (3) process tool

PTD: see "Process Technology Development"

PTS: Pesticides & Toxic Substances Branch (EPA)

Pu: plutonium

Pu Chem: Plutonium Chemistry

PU&D: Property Utilization and Disposal

Pu Met: Plutonium Metallurgy

Pu Mfg: Plutonium Manufacturing

PUNCHADP: abbreviation used on a Tool Order to refer to a punch adapter

PUNCHBSE: abbreviation used on a Tool Order to refer to a punch base

Pu Operations: group which provides information on chemistry-related questions; points out potential recovery problems and identifies the need for any special recovery facilities that might be required to support a program

Pu Ops: Plutonium Operations

Pu Rcvy/Waste Trt Engrg: Plutonium Recovery/Waste Treatment Engineering

PURPA: Public Utilities Regulatory Policies Act of 1978

Pu Spec: Plutonium Spectroscopy

PVC: polyvinyl chloride

PW: process waste .

PWDS: Protected Wireline Distribution System

PWIEG: Plutonium Weapons Information Exchange Group

Pyrochem Ops: Pyrochemical Operations

q

Q1404: (method of checking in-process improvements before implementing into a WR M-document)

QA: (1) see "Quality Acceptance;" (2) Quality Assurance

QAA: Quality Assurance Audit

QACC: Quality Acceptance Criteria Checklist

QAIP: see "Quality Assurance Inspection Plan"

QAL: Quality Assurance Level, in accordance with definitions established by the plantwide NWQA Implementation Team; utilized to identify appropriate applications for existing and new spare parts

QALD: Quality Assurance Level Disposition

QAO: Quality Assurance Officer

QAP: Quality Assurance Program

QAPP: Quality Assurance Program Plan

QA/QC: quality assurance/quality control

QC: quality control

QCDC: see "Quality Control Disposition Card"

QDR: see "Quality Disposition Record"

QE: Quality Engineering

QE&C: Quality Engineering & Control

QE Ops: Quality Engineering Operations

QER: see "Qualification Evaluation Release"

QE Sys & Plans: Quality Engineering Systems & Plans

QF: Quality Factor, also Neutron Quality Factor

QID: see "Quality Instruction Directive"

QIL: see "Quality Instruction List"

QIS: see "Quality Information System"

QL: (1) quality level; (2) Quality Laboratory

QO&P: Quality Operations & Plans

Qual Accept: Quality Acceptance

qualification: (1) the combination of an individual's experience, physical attributes, and technical, academic, and supervisory knowledge and skills developed through training, education, and demonstrated on-the-job performance; (2) refers to all those educational, experiential, training and/or special requirements necessary for performance of assigned responsibilities

Qualification Evaluation Release (QER): a document which issues the results of an evaluation of product, processes, or Acceptance Equipment and, if the evaluation results are satisfactory, authorizes use of the listed items

qualification (Personnel): the (documented) characteristics or abilities gained through education, training, or experience, as measured against established requirements, such as standards or tests, that qualify an individual to perform a required function

qualified: attribute of a person who, through formal education or by possession of a certificate of professional training, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to operate, solve, or resolve problems associated with an operation

qualified instructors: instructors who have attended the Train-the-Trainer course or otherwise have been certified to teach, have attended the On-the-Job Training course for their area of instruction, are competent in the area of training, and are approved by management to provide on-the-job training

qualified personnel: personnel who have received appropriate training

quality: the total features and characteristics of a product or service that bears on its ability to satisfy given needs

Quality Acceptance (QA): inspection organization

Quality Assurance (QA): all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service

Quality Assurance Audit (QAA): a planned and documented activity performed by Quality Engineering to determine, by evaluation of objective evidence, the adequacy and effectiveness of operations and their compliance to established procedures, instructions, drawings, specifications and other applicable documents; goal is evaluation of activities and presentation of results in order to effect improved performance; three categories of QA Audits are: Control System, Process, and Product; see "Team Audits"

Quality Assurance Inspection Plan (QAIP): defined in QAP 2.1, Section 2.1. Document prepared by the QAA for use in performing verification inspection or submittals and QAS 4.0 coverage

Quality Assurance Officer: employee appointed by the manager to administer the Quality Assurance Program for a functiona group or program

Quality Assurance Record (QAR): a completed document that furnishes evidence of the quality of items and/or activities affecting quality

Quality Control (QC): (1) the operational techniques and the activities which sustain a quality of product or service that will satisfy given needs; (2) the use of such techniques or activities

Quality Control Disposition Card (QCDC): obsolete - see " Quality Disposition Record (QDR)"

Quality Disposition Record (QDR): a transmittal notice used to document the identification and disposition of nonconforming material or material diverted from production; product found to be defective at a final inspection or testing operation is reported on a QDR by the organization which discovered the defect; used to transmit deviation information to Program Management

quality evidence: written information which indicates the extent of conformance to quality specifications or drawing requirements; may be based on physical inspection, process control data, or physical and chemical tests

quality factor: the principal factor by which the absorbed dose is to be multiplied to obtain a quantity that expresses, on a common scale for all ionizing radiations, the biological damage to exposed persons; used because some types of radiation, such as alpha particles, are more biologically damaging than other types

Quality Information System (QIS): defined in QP-10A, Section 2.0; a partially automated system designed to provide quality performance data (yield, rework, deviation)

Quality Instruction Directive (QID): instructions issued by Quality Engineering to define the means and methods of performing a particular operation; usually defines acceptance function on non-WR items

Quality Instruction List (QIL): defined in QAP 4.0, Section 2.1; an index document of active QAIPs for material or submittal basis listing the current effective issue

Quality Plan: a document which describes the tasks, completion dates and responsibility required to implement quality requirements

Quality Program Plan: the documented plans for implementing the Quality Program

quantitative fit test: respirator fit testing performed at the respirator fit test chamber

quantity production and stockpile: DOE Phase 6; see P&C Handbook 3.1, Section 2.6

quarterly: a time interval not to exceed four calendar months

Qwiknet: RF standard IBM software used for scheduling; can interface with IBM mainframe software, Project 2 (P2)

r

r: radius, local*

R: (1) resistance*; (2) roentgen*

RA: Reimbursement Authorization (DOE contract modification)

RACT: reasonably achievable control technology

rad: (1) radian*; (2) the basic unit of absorbed dose of ionizing radiation; acronym for radiation absorbed dose

rad dose assess: radiation dose assessment

radiac: acronym derived from "radioactivity detection indication and computation;" a generic term applying to radiological instruments or equipment

radiation: (1) indicates alpha, beta, gamma, X-ray and neutron types of ionizing radiation; (2) energy travelling through matter or space in the form of waves

radiation area: any area, accessible to personnel, in which the level of radiation is such that a major portion of an individual's body could receive in any one hour a dose in excess of 5 millirem, or in any five consecutive days a dose in excess of 100 millirem

radiation controlled area: an area to which access is controlled in order to protect individuals from exposure to radiation and radioactive materials

radiation detection instrument: a device that detects and registers the characteristics of ionizing radiation (see "counter")

radiation monitoring: see "monitoring"

radiation, nuclear: particles (alpha, beta, neutrons) or photons (gamma) emitted from the nucleus of an unstable (radioactive) atom as a result of radioactive decay

radiation-producing device: any equipment which, when energized, produces ionizing radiation, either by intent or incidental to its use

radiation shielding: reduction of radiation field by interposing a shield of absorbing material between any radiation source and a person's work area or radiation-sensitive device

radiation source: usually a man-made sealed source of radioactive material used in teletherapy, radiography, as a power source for batteries, or in various types of industrial gauges. Machines such as accelerators, x-ray units and radioisotope generators and natural radionuclides may be considered sources.

radiation standards: exposure standards, radioactivity concentration guide, rules for safe handling, regulations for transportation, regulations for industrial control of radiation and control of radioactive material by legislative means

radiation warning symbol: an officially prescribed symbol (a magenta trefoil) on a yellow background that must be displayed where certain quantities of radioactive materials are present or where certain doses of radiation could be received; uses are prescribed by law

radiation worker: an occupational worker whose job assignment requires work on, with, or in the proximity of radiation producing machines or radioactive materials and/or who has the potential of being routinely exposed above 0.1 Rem per year, which is the sum of the annual effective dose equivalent from external irradiation and the committed effective dose equivalent from internal irradiation

radical: a group of atoms that behaves as a single atom in chemical reactions; e.g., nitrate and sulfate

radioactive: exhibiting radioactivity or pertaining to radioactivity

radioactive contamination: deposition of radioactive material in any place where it is not contained or wanted

radioactive isotope: see "radioisotope"

radioactive series: a succession of nuclides, each of which transforms by radioactive disintegration into the next until a stable nuclide results. The first member is called the parent, the intermediate members are called daughters, and the final stable member is called the end product.

radioactive sources: any electroplated, sealed solid, gaseous or liquid radioactive material that is used for chemical tracers, radiation comparison measurements, radiation instrumentation calibration, irradiation, assay, or non-destructive testing

radioactive waste: see "waste, radioactive"

radioactivity: the spontaneous emission of radiation, generally alpha or beta particles, often accompanied by gamma rays, from the nucleus of an unstable isotope

RADIOFIX: abbreviation used on a Tool Order to refer to a radiographic fixture

radioisotope: an unstable isotope of an element that decays or disintegrates spontaneously, emitting radiation; more than 1300 natural and artifical radioisotopes have been identified

radiological area: any area within a controlled area where an individual can receive a dose equivalent greater than 5 mRem in one hour at 30 cm fromt he radiation source or any surface through which the radiation penetrates or where airborned radioactive concentrations greater than 1/10 of the derived air concentrations are present (or are likely to be) or where surface contamination levels are greater than ten times those specified in Attachment II of DOE Order 5480.11

Radiological Control Area (RCA): any area to which access is controlled in order to protect individuals from exposure to known or suspected radiation and radioactive materials

radiological incident: radioactive material release to areas where radioactive materials are not normally found. Also includes personnel contamination, postive wound counts, inhalation of radioactive material, and radiation exposure above the control levels.

radiological survey: the evaluation of the radiation hazards accompanying the production, use, or existence of radioactive materials under a specific set of conditions. Such evaluation customarily includes a physical survey of the disposition of materials and equipment, measurements or estimates of the levels of radiation that may be involved, and a sufficient knowledge or processes affecting these materials to predict hazards resulting from expected or possible changes in materials or equipment.

radiologically uncontrolled area: areas where no radiaoctive materials are permitted and radiological controls are not necessary

radiology: that branch of medicine dealing with the diagnostic and therapeutic applications of radiant energy, including x-rays and radioisotopes

radionuclide: see "radioisotope"

radiosensitivity: the relative susceptibility of cells, tissues, organs, organisms, or other substances to the injurious action of ionizing radiation

radium (RA): a radioactive metallic element with the atomic number 88 and an atomic weight of 226; associated in nature with uranium, which decays to radium by a series of alpha and beta emissions; used as a radiation source; occurs in minute quantities associated with uranium in pitchblend, carnotite and other minerals.

RADIUSGA: abbreviation used on a Tool Order to refer to a radius gage

Rad Meas: Radiation Measurements

Rad Mon: obsolete; see "Rad Pro"

radon (Rn): a radioactive element that is one of the heaviest gases known; its atomic number is 86, and its mass number is 222; a daughter of radium

Rad Pro: Radiation Protection

rad/sec: radian per second*

rad/sec^2: radian per second squared*

RAM: (1) Reliability, Availability, Maintainability; (2) Responsibility Assignment Matrix; (3) random access memory

RB: see "Reimbursable Business"

RBE: relative biological effectiveness (of radiation)*

R.C.: resistance capacitance

RC: Response Center (CDH)

RCA: radiological control area

RCG: radioactivity concentration guide

RCRA: Resource Conservation & Recovery Act of 1976 and subsequent amendments as codified in Title 40 CFR, Parts 260-270. These regulations provide for the protection of human health and the environment through proper management and minimization of hazardous wastes.

RCRA-Regulated: waste materials which contain hazardous constituents regulated by the Colorado Department of Health pursuant to 6 CCR 1007-3, Part 261, and U.S. Environmental Protection Agency Code of Federal Regulations pursuant to 40 CFR, Part 261. RCRA- regulated materials may or may not be contaminated with radioactive materials.

Rcvy Ops: Recovery Operations

R&D: research and development

RD: restricted data

RDC: see "Request for Document Change"

RDI: see "Retirement Disposal Instruction"

Re: Reynolds number*

REA: Rural Electrification Administration

reaction: any process involving a chemical or nuclear change

real-time: pertaining to the performance of a computer computation during the actual time that the related physical process takes place, in order that results of the computation can be used in guiding the physical process

receipts: the action or documentation involved in the process of accepting an item or shipment of material from a shipper or transfer agent

receiving: taking delivery of an item at a designated location

Receiving Inspection Report Sheet (RIRS): disposition of vendor-procured product

Rec Mgmt: Records Management

recon.: reconnect

recoverable residues: materials that are determined to be greater than DOE Economic Discard Limit

recurrence control: action(s) taken to ensure a deviation, error or nonconformance does not occur again

recycling: the reuse of fissionable material after it has been recovered by chemical processing from spent or depleted reactor fuel, re-enriched and refabricated into new fuel elements

red.: reducer

reduction: the addition of one or more electrons to an atom or ion

Ref.: reference*

refrig.: refrigerator

REFSTD: abbreviation used on a Tool Order to refer to a reference standard

regulatory authority: the regulatory authority statement in an HS&E charter delineating the powers of the organization to regulate activities across directorate lines and within the HS&E directorate

Reimbursable Business (RB): work which may be billed to the requesting agency as the work is accomplished; see "Special Order Work"

reject: indicates that the item, service or activity cannot be made to meet its intended requirements of functions and must be scrapped

relief/safety/vacuum breaker lift pressure setpoint: the value of the pressure/vacuum required to actuate a valve or rupture disc

relief/safety/vacuum breaker reseat pressure setpoint: the value of the pressure/vacuum required to restore a valve to its original state

REM: roentgen equivalent man; a unit of absorbed radiation dose in biological matter; equal to the absorbed dose in rads, multiplied by a quality factor to express the relative biological effectiveness of the radiation (see "quality factor")

removable surface contamination: radioactive deposits on a surface as measured by the portions that are wiped from the surface by a soft absorbent material in accordance with a written procedure

rep.: representative

Rep: roentgen equivalent physical*

repair: the process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item still does not conform to the original requirement

reportable nuclear material alarm: an alarm resulting from critical loss detection elements which are not resolved within a specified time period

reporting identification symbol (RIS): a unique combination of three or four letters assigned for purposes of material identification in the NMMSS

reporting unit: the measurement unit of a major element (e.g., grams, kilograms)

Req.: requisition*

requester: (of a Lockout/Tagout Permit [LTP]) a knowledgeable person responsible for the preparation of an LTP and for the implementation and return of a Lockout/Tagout. The requester shall always be a Rocky Flats Plant employee and may be the equipment owner, Maintenance, or Construction Management (representing contractors)

Request for Document Change (RDC): document written by a functional group (such as NDT, Production, Quality Engineering) to request a change to a Process Operations Sheet (POS), procedure or drawing used in the manufacture of WR and non-WR product; normally converted to an Engineering Order in compliance with the formal Engineering Change Control (ECC) System

request for estimate (RFE): Form RF-46674 required by.Cost Estimating to begin work

requirement: action(s) essential to meet the needs of the customer or product design

reset: the point(s) at which a device returns to its normal state for a given function; includes a tolerance and a nominal setting

residues: a variety of solid industrial materials used in process and fabrication operations at Rocky Flats that become contaminated with nuclear materials and require a drum count or other type measurement to determine recoverability

residues (for recovery): contaminated material which is transferred between MBAs for eventual recovery

Res Mgmt: Resource Management

resp.: respirator

respirator: respirator refers to either or both the half-mask and full-facepiece respirators

Res Plng: Resource Planning

Res Plng & IE: Resource Planning & Industrial Engineering

responsibilities: the responsibilities statement in an organization's charter defines the actions/activities required of the organization in order to support the mission statement

responsible user: the supervisor who normally controls an area or piece or equipment

restricted area: any area to which access is controlled for the protection of individuals from exposure to radiation and radioactive materials

restricted use pesticides: any pesticide or pesticide use which is classified for restricted use by the Administrator of the U.S. Environmental Protection Agency (EPA)

restricted work envelope: in robotics, the portion of the work envelope that is restricted by limiting devices that establish limits the robot cannot exceed. The maximum distance that the robot can travel after the limiting device is actuated shall be considered the basis for defining the restricted work envelope of the robot.

retirement: DOE Phase 7; a program for the physical elimination of a nuclear weapon system from stockpile

Retirement Disposal Instruction (RDI): document prepared by the Mason & Hanger-Silas Mason Co. Pantex Plant; a disposal plan for all of the material of a weapon

Return Order (RO): form used to return defective product to vendors; used to send RF material to vendor for processing

rev: (1) revolution; (2) revision

review: a formal, systematic inspection of a program or project, usually by external personnel

revision status: the current revision level of a drawing or procedure

rework: the process by which an item is made to conform to the original requirements by completion or correction

rf: radio frequency*

r.f.: raised face

Rf: rate to flow*

RF: Rocky Flats

RFA: Rocky Flats Authorization to Ship

RFAAC: Rocky Flats Administrative Apprenticeship Committee

RFAM: Rocky Flats assay meter

RFAO: Rocky Flats Area Office obsolete; see "Rocky Flats Office"

RFC: Rocky Flats classified (control number for production forms)

RFE: Request for Estimate

RFO: Rocky Flats Office (of DOE)

RFP: (1) Rocky Flats Plant; (2) Request for Proposals

RFPM: Rocky Flats Policy Manual

RFPU: Rocky Flats Program Unit (CDH)

RFQ: Request for Quotations

RGGA: abbreviation used on a Tool Order to refer to a ring gage

r.h.: relative humidity*

RH: remote-handled

RI: Rockwell International

RIIC: Report of Inventoried Item Change

RIRS: see "Receiving Inspection Report Sheet"

RLMSI: RLM Standards Institute

Rm: room*

RM: (1) raw material; (2) resources management

RMA: Rubber Manufacturers Association

RML: Radioactive Material Loss (category)

rms: root mean square*

rnd: round

RO: see "Return Order"

RO: Reliability of Operations (category)

roentgen (R): a unit of exposure to ionizing radiation. It is that amount of gamma or X-rays required to produce ions carrying 1 electrostatic unit of electrical charge in 1 cubic centimeter of dry air under standard conditions. Named after Wilhelm Roentgen, a German scientist who discovered X-rays in 1895.

roentgen equivalent man: see "REM"

roi: region of interest

ROI: Radiological Operating Instructions; formerly Radiation Monitoring Procedures Manual

ROM: read-only memory

ROUNDRG: abbreviation used on a Tool Order to refer to a rounding ring

routine survey: surveys performed on a regular basis

RPASMC: Rubber & Plastic Adhesive & Seant Manufacturers Council

RPG: Radiation Protection Guide

rpm: revolutions per minute*

rps: revolutions per second*

RPT: Radiological Protection Technicians (RFP)

r/R: variation (r) from blade chord

RR: Repair Request

RRA: Rubber Reclaimers Association

RRAP: Regional Radiological Assistance Program

RRT: Regional Response Team

RS: Radioactive Shipments (category)

RSBA: Rail Steel Bar Association

RT: radiographic testing

R_t: reliability*

RTP: Request for Technical Proposals

RTR: real-time radiography

RUNOUTGA: abbreviation used on a Tool Order to refer to a run out gage

RWMA: Resistance Welders Manufacturers' Association

RWMC: Radioactive Waste Management Complex

ry: rydberg*

S

S: (1) siemens*; (2) south*; (3) Security (RF)

SA: (1) Safety Analysis; (2) Statistical Applications

SAAM: "selective alpha air monitor" instruments which continuously monitor the air for alpha emitting radioactive material. These instruments are located throughout areas where radioactive materials exist, and are set to alarm when airborne radioactive contamination exceeds a predetermined level.

SACNET: Secure Automatic Communications Network

SAE: Society of Automotive Engineers, Inc.

safeguards: an integrated system of physical protection, material accounting, and material control measures designed to deter, prevent, detect, and respond to unauthorized possession, use or sabotage of special nuclear material. Safeguards include the timely indication of possible diversion and credible assurance that no diversion has occurred.

safeguards accountability network (SAN): a plantwide, online, interactive computer system designed to track the handling and flow of nuclear materials at Rocky Flats

safety analysis: a process to: (1) systematically identify the operations and associated hazards of a facility or process; (2) describe and analyze the adequacy of the measures taken to eliminate, control, or mitigate identified hazards; and (3) analyze and evaluate potential accidents and their associated risks

Safety Analysis Report (SAR): a formal report describing all aspects of a nuclear facility, including the findings of the safety analysis process for that facility and/or its operations. An SAR is a document that: (1) describes a facility and those design features related to the safety of the facility; (2) describes the operations conducted within the facility; (3) establishes Operational Safety Requirements (OSRs); (4) addresses support functions (e.g., HS&E programs, quality assurance, employee training, emergency response plans, and waste management) and their impact on the facility; (5) delineates the various safety analyses performed including postulated accidents, frequency of occurrence, potential consequences, and associated risks; and (6) provides a summary of the findings of the safety analysis along with an assessment of the risk to the public, employees, facility, and environment resulting from normal operations, operational accidents, and natural phenomena events. A Preliminary SAR is prepared during the design phase of a new facility and a Final SAR is prepared and approved prior to starting operations.

Safety Limit (SL): limits on important process variables that are found to be necessary to reasonably protect the integrity of the principal physical barriers that guard against the uncontrolled release of hazardous materials. Important process variables are measurable parameters which individually, or in combination, reflect the basic hazards for which controls are specified; established from a basic physical condition of a reactor such that the physical integrity of the reactor is assured if the safety limit is not exceeded

Safety (Scram) Systems: those systems, including their associated input channels, which are designed to initiate automatic reactor protection by reducing reactivity to a safe level, thereby shutting down the reactor (see Scram Time)

Sal Admin: Salary Administration

salt: a compound between a metal (positive) ion and a negative ion or radical; salts are formed by the reaction of an acid with a base

SAMA: Scientific Apparatus Makers Association

SAN: Safeguards Accountability Network

SANDS: Surveillance Accident Nuclear Detection System

SAPR: see "Stockpile Approved Product Record"

SAR: (1) Safety Analysis Report; (2) Simultaneous Activity Request

SARA: Superfund Amendment and Reauthorization Act (Emergency Planning & Community Right To Know Act)

SARF: Supercompactor & Recovery Facility

SARP: safety analysis report for packaging

SAS: Society for Applied Spectroscopy

SAWFIX: abbreviation used on a Tool Order to refer to a saw fixture

SBCC: Southern Building Code Congress

SBI: Steel Boiler Institute

SCA: single-channel analyzer

scattered radiation: radiation that, during its interaction with a substance, has been changed in direction; it may also have been modified by a decrease in energy and is a form of secondary radiation

scc: standard cubic centimeter*

SCCN: Salary Classification Change Notice (form)

SCEM: scanning electron microscope

scf: standard cubic feet*

scfh: standard cubic feet per hour*

scfm: standard cubic feet per minute*

sch.: schedule

schedule 44: a preliminary budgeting and planning document used by Capital Budgets to initiate a Line Item Project. This document describes the scope of a project and includes construction schedule, cost estimate and funding plan; also known as a "Construction Project Data Sheet"

Sci Apps: Scientific Applications

scientific notation: a method of conveniently representing any number, including those that are very large or very small. Numbers are represented as the product of a nonexponential term and an exponential term, in the general form of M X 10^n. The nonexponential term M is a number between 1 and 10 written with a decimal to the right of the first non-zero digit in the number. This places the decimal in the "standard position." The exponential term is a 10 raised to a whole number exponent "n" that may be positive or negative. The value of n is the number of places the decimal must be moved from the Standard Position in M to be at the true position in the number represented by M X 10^n. If n is positive, the true decimal position is to the right of the standard position. If n is negative, the true decimal position is to the left of the standard position.

scintillation counter (detector): an instrument that detects and measures ionizing radiation by counting the light flashes (scintillations) induced by the radiation in certain materials; the combination of phosphor, photomultiplier tube, and associated electronic circuits for counting light emissions produced in the phosphor by ionizing radiation

Scope and Estimate (S&E) Package: a completed S&E package consists of the following: a transmittal letter, the scope design, which includes a scope narrative and/or drawings/sketches, a Part IV cost estimate, and a detailed cost estimate breakdown

scope design: an engineering task that utilizes the User's operational requirements to define all salient aspects of a project including overall size of major components and facilities and any other elements that set limits to a project. Data developed shall be sufficient to assure that all elements of the project that will affect the TEC are identified, thus allowing for the preparation of an accurate cost estimate for budgeting.

scp: spherical candle power*

SCPI: Structural Clay Products Institute

SCR: silicon-controlled rectifier

scram: initiating an operation to make a critical system subcritical, usually rapidly

Scram Time: the elapsed time between reaching a Limiting Safety System Set Point and the operation of a specified scram mechanism such as a control rod or dump valve (see Safety [Scram] Systems)

scrap: byproduct forms of SNM generated during chemical and mechanical processing that are unsuitable for use as finished product

scrap cost: dollar amount invested in product at the time of scrap

SCRIBFIX: abbreviation used on a Tool Order to refer to a scribe fixture

SCRIBTL: abbreviation used on a Tool Order to refer to a scribe tool

SDC: segmented drum counter

SDI: Steel Door Institute

SDO: Staff Duty Officer (DOE/RFO)

SDP: Site Development Plan

SDP&A: Safeguards Development, Planning & Assessment

SEACC: system engineering analysis computer code

sealant/encapsulant: substance that either penetrates an asbestos-containing material and adheres to the substrate, or forms a tough skin over the material. The former is called a penetrating encapsulant, the latter a bridging encapsulant.

sealed source: nuclear material (generally for use in test and calibration) which has been packaged to be environmentally and critically safe

sec: (1) secant*; (2) second*; (3) section*

sech: secant (hyperbolic)*

secondary radiation: radiation originating as the result of absorption of other radiation in matter; may be either electromagnetic or particulate

secret: level of classification for information or material which, in the event of an unauthorized disclosure, could reasonably be expected to cause serious damage to national security

self appraisal: monitoring of operations, by the organization responsible for the operation, to determine compliance with applicable procedures, drawings, and specifications. Self-appraisals provide for the same items as surveillance, but in a less formalized and visible manner. It provides management the opportunity to identify and correct their own problems before an outside organization intervenes.

self-assessment: an internal, systematic review of the acts and decisions with respect to a specified area, in order to independently verify or evaluate compliance to operational requirements, specifications, or contract requirements

SEM: scanning electron microscope (microscopy)

SEMP: Systems Engineering Management Plan

Senior Experimenter: a certified senior reactor operator

SENRAD: Serial Number Recognition Accountability System

sequence of operations: a series of sequentially-listed manufacturing operations required to produce a specific piece part or assembly

SES: Standards Engineers Society

SETBLK: abbreviation used on a Tool Order to refer to a set block

setpoint: the point(s) at which a device changes state to cause a function; includes a tolerance and a nominal setting

SFC: shop floor control

SFDS: short form data sheet

SFIR: see "Significant Finding Impact Report"

S/FRD: secret/formerly restricted data

SFSA: Steel Founders' Society of America

SG: (1) strain gage; (2) Safeguards (RF)

shall: word used to denote a requirement

shf: superhigh frequency*

shielding (shield): any material or obstruction that absorbs radiation and thus tends to protect personnel or material from the effects of ionizing radiation

Shift Manager: a shift supervisor designated by the Building Manager to serve in the Building Manager's capacity on a backshift

shift relief: the process of information preparation and exchange between offgoing and oncoming personnel to ensure that oncoming personnel receive the information necessary to adequately fulfill their shift responsibilities normally conducted with only the functional counterpart on another shift

Shift Supervisor: any supervisor or foreman who directs process or process/building support activities on a shift-by-shift basis

Shift Supervisor's log: a narrative log used by shift operating and support supervision to describe or record key information and events as deemed necessary and prescribed by department management for evaluating and trending building, operating, or process conditions or for analysis of previous conditions

shift turnover: the action of verification between the offgoing and oncoming personnel that appropriate and adequate information has been exchanged, and acceptance of the shift relief by oncoming personnel; normally transacted with only functional counterpart on another shift

shipper/receiver difference (S/RD): the difference between the measured quantity of nuclear material (as stated by the shipper as being shipped) and the received quantity (as stated by the receiver as being received).

shoe cover (booty): a covering to protect shoe from contact with radioactive contamination

shop traveler: (1) a document which lists the operations required to build and inspect an item, the documents that describe the operations, and (where pertinent) the applicable specifications; (2) a permanent record of how, when, and by whom each assembly or subassembly was built, thus forming part of RF's Quality Control Records; prepared by Production Processing; formerly known as "Assembly Process Card;" see also "Process Operations Sheet"

should: denotes a recommendation

shp: shaft horsepower*

shutdown: an experiment is shut down when the reactivity which was added remotely has been removed, the reactor controls have been deactivated, and the console keys have been returned to storage

SI: Security Inspector

SIC: Standard Industry (industrial) Code (IRS code)

SI&D: Safeguards Integration & Development

SID: secret information data

SIER: see "Special Instruction Engineering Release"

sievert (Sv): a unit, in the international system of Units (SI), of dose equivalent; (1 Sv = 100 rem)

SIGMA: Sealed Insulating Glass Manufacturer's Association

Sigma 1: theory of operation (hydrodynamic and nuclear) or complete design of thermonuclear weapons or their unique components

Sigma 2: theory of operation or complete design of fission weapons or their unique components; includes the high explosive system with its detonators and firing unit, pit system, and nuclear initiation system as they pertain to weapon design and theory

Sigma 3: manufacturing and utilization information not comprehensively revealing the theory of operation or design of the physics package; complete design and operation of nonnuclear components, but only information as prescribed below for nuclear components; utilization information necessary to support the stockpile-to-target sequence, including: (a) general external weapon configuration, including size, weight, and shape, (b) environmental behavior, fuzing, ballistics, yields, and effects, (c) nuclear components or subassemblies which do not reveal theory of operation or significant design features, (d) production and manufacturing techniques relating to nuclear components or subassemblies, (e) anticipated and actual strike operations

Sigma 4: information inherent in preshot and postshot activities necessary in the testing of atomic weapons or devices; excluded are the theory of operation and the design of such items; information includes: (a) logistics, administration, other agency participation, (b) special construction and equipment, (c) effects, safety, (d) purpose of tests, general nature of nuclear explosive tested, including expected or actual yields and conclusion derived from tests not to include design features

Sigma 5: production rate and/or stockpile quantities of nuclear weapons and their components

Sigma 9: general studies not directly related to the design or performance of specific weapons or weapon systems, e.g., reliability studies, fuzing studies, damage studies, aerodynamic studies

Sigma 10: chemistry, metallurgy, and processing of materials peculiar to the field of atomic weapons or nuclear explosive devices

Sigma 11: information concerning inertial confinement fusion which reveals or is indicative of weapon data

Sigma 12: complete theory of operation, complete design, or partial design information revealing either sensitive design features or how the energy conversion takes place for the nuclear energy converter, energy director, or other nuclear-directed energy weapon systems or components outside the envelope of the nuclear source, but within the envelope of the nuclear-directed energy weapon

Sigma 13: manufacturing and utilization information and output characteristics for nuclear energy converters, directors or other nuclear-directed energy weapon systems or components outside the envelope of the nuclear source, not comprehensively revealing the theory of operation, of sensitive design features of the nuclear-directed energy weapon, or how the energy conversion takes place

Significant Finding Impact Report (SFIR): the mechanism used for alerting the Weapons Complex, DOE that a potentially significant anomalous condition is under investigation. The appropriate Design Agency is responsible for initiating SFIRs and directing investigation activities and SNLA is responsible for issuing control numbers and monthly executive summaries of the status.

sin: sine*

sinh: sine (hyperbolic)*

SIO: Signal Input/Output

SIR: Supervisor's Investigation Report

SJI: Steel Joist Institute

SLEDS: Sandia Laboratories Engineering Drawing System

SLT: see "Stockpile Laboratory Test"

SM: (1) sheet metal; (2) Safeguards Measurements

SMA: Screen Manufacturers Association

SMACNA: Sheet Metal and Air Conditioning National Association

smear: procedure in which a piece of dry filter paper is rubbed across a surface and its radioactivity measured to determine if the surface is contaminated with removable radioactive material

smear survey: a survey made of the purpose of determining the presence of removable radioactive material on a surface. It is done by wiping, with slight pressure a piece of soft filter paper over a representative surface area, usually 100 cm^2.

smoke test: a qualitative fit test, done at any location, using an irritant smoke, to determine the relative fit of a respirator; used for visitors who will use the respirator for egress only and to verify quantitative fit as necessary

SMSA: Standard Metropolitan Statistical Area (BLS)

sn: sine of the amplitude, an elliptic function*

SNLA: Sandia National Laboratories Albuquerque

SNLL: Sandia National Laboratories Livermore

SNM: special nuclear material

S/NSI: secret/national security information

SO_2: sulfur dioxide

SO: (1) system operating; (2) systems operation

SOE: (1) stationary operating engineer; (2) stationary operating equipment

Software Quality Assurance (SQA): all those planned and systematic actions necessary to provide adequate confidence that software will satisfy given needs or specific requirements

sol: soluble*

Solid Waste Management Unit (SWMU): an inactive waste disposal area as defined in the Resource Conservation and Recovery Act (RCRA). These areas represent known and unknown hazards to human health and the environment.

Solid Waste Ops: Solid Waste Operations

soln: solution*

solubility: the number of grams of a compound that can be dissolved in a liter of solvent

soluble: readily dissolved in body fluids

solute: the compound that is dissolved in a solvent to produce a solution

solution: the homogeneous mixture formed by mixing a gaseous, liquid, or solid substance (the solute) with a liquid (the solvent); solutions contain molecules or ions of the solute uniformly dispersed throughout the solvent

solvent: a liquid which dissolves another substance (solute) to form a solution

solvent extraction: the process of removing a substance from a solution by intimately contacting it with a second liquid (not miscible with the first) in which the substance is more soluble

somatic effects of radiation: effects of radiation limited to the exposed individual, as distinguished from genetic effects, which may also affect subsequent unexposed generations

SOP: (1) standard operating procedure; (2) specified operating power

SOT: systems operation test

SO testing: Systems Operational Testing

SO Testing Plan: a comprehensive document that provides information on SO testing setup, conduct, acceptance criteria, etc. It also provides a means to document approval of the plan and setup, to document test results, and to document final acceptance of the tested system. Final acceptance documentation is a certification that the system safely performs as it was designed to perform.

source document: prepared by the person generating a transaction, this is the form or report which reflects an item's attributes and is used for input into SAN

source material: any physical or chemical form of uranium or thorium or ores which contain by weight 0.05% or more of uranium or thorium

SOW: (1) special order weapon; (2) statement of work; (3) see "Special Order Work"

SP: Special (category)

SP&A: Safeguards Planning & Assessment

sp act.: a specific activity*

SPE: Society of Plastics Engineers

spec.: specification

Special Assembly Engineering: a group within Program Management which provides engineering services to Special Order Work (SOW) customers, coordinating the fabrication of hardware or equipment. The primary responsibility is the fabrication of nuclear devices for high-energy physics experiments at the Nevada Test Site (NTS) for both LLNL and LANL. Other specialty work for universities, laboratories, government agencies, and foreign governments is accomplished on a non-interfering basis.

Special Assembly Engineering Manager: person responsible for overall managing of project engineers, craftsmen, and support personnel assigned to DJO projects

special equipment: self-propelled wheel or track vehicles used on plantsite and not covered by the operator's Colorado Adult Driver's License

special instruction engineering order: an EO used to convey instruction to manufacturing or inspection

Special Instruction Engineering Release (SIER): a written authorization to issue special engineering instructions against a specific item or product

special locking quadrant: a designation for special throttling valves or dampers used to balance the flow in a given system

special nuclear material: includes plutonium, uranium-233, or uranium enriched in the isotopes uranium-233 or uranium-235

Special Order Work (SOW): reimbursable work; work not directly funded under the DOE/AL Production and Surveillance Program for Rocky Flats

special process: (1) a test or manufacturing process which requires special qualifications and control or equipment procedures and/or personnel, in order to ensure conformance to product specifications; (2) a process, the results of which are highly dependent on the control of the process or the skill of the operators, or both, and in which the specified quality cannot be readily determined by inspection or test of the product

Special Programs: a group within Program Management responsible for special programs or projects not directly related to WR programs, the disassembly of SLT and NMLT units, and the manufacture and assembly of special nuclear target devices for energy and weapons research.

Special Projects: a group within Program Management which is responsible for managing the programmatic aspects of the Modification Center for Safe Secure Transports (SST), the Non-Weapons Quality Assurance-1 (NQA-1) program for Program Management organizations, and for Depleted Uranium SOW on Non-WR projects.

special projects: a group within Program Management which is responsible for the Modification Center Program and Uranium Projects

Special Weapons Projects: a group within Program Management which has a prototype design and modeling function for systems being considered for training purposes and future applications. Special Weapons Projects also produces special nuclear target devices for energy and weapons research, and is responsible for assembly and disassembly of devices and for providing other mechanical support to Special Order projects. This group assembles and disassembles the special prototype devices purchased on special orders, and disassembles, inspects, and performs surveillance evaluation on WR stockpile sample devices.

specification: detail of product design and performance

Specification Exception Release (SXR): a teletype message used for formal deviation of Design Agency specifications; an engineering release authorizing the use of a specific quantity of product which does not completely meet its specification, i.e., product definition

spent (depleted) fuel: nuclear reactor fuel that has been used to the extent that it can no longer effectively sustain a chain reaction

SPGOPLGA: abbreviation used on a Tool Order to refer to a special go plug gage

SPGORGGA: abbreviation used on a Tool Order to refer to a special go ring gage

sp. gr.: specific gravity*

sp. ht: specific heat*

SPI: Society of Plastics Industry

SPIB: Southern Pine Inspection Bureau

Sp Lab Proj: Special Laboratory Projects

split: the process of separating one item into more than one material item (one-to-many function)

SPLITRG: abbreviation used on a Tool Order to refer to a split ring

spontaneous fission: fission that occurs without an external stimulus; several heavy isotopes decay in this manner; e.g., curium-242, Pu-239

Sp Proc Ops: Special Processing Operations

SPR: Simplified Practice Recommendations, U.S. Department of Commerce

spray paint booth: a power-ventilated structure provided to enclose or accommodate a spraying operation; to confine and limit the escape of spray, vapor, and residue; and to safely conduct or direct them to an exhaust system

Sp Rcvy Ops: Special Recovery Operations

SPTHDGA: abbreviation used on a Tool Order to refer to a special thread gage

SPTR: Special Process Training Representative

sp. vol: specific volume*

SPW: Single Present Worth

SQA: see "Software Quality Assurance"

SQGA: abbreviation used on a Tool Order to refer to a squareness gage

sr: steradian*

SR: special recovery

S/RD: secret/restricted data

SREP: see Stockpile Reliability Evaluation Program

SRG: Safety Review Group (RFP)

SRP: Savannah River Plant

S&S: Safeguards and Security

SS: (1) safety stock; (2) source and special; (3) special source; (4) stainless steel* (not S/S); Type 304 SS, Type 304L (AISI designations for types of stainless steel); (5) Safeguards Systems; (6) Safe and Secure; (7) Shift Superintendent (RF)

SSC: Stationary Sources Control Branch (CDH)

SSD: Structural Statics and Dynamics Project

SSPC: Steel Structures Painting Council

SST: (1) safe, secure trailer; (2) safe, secure transport

ST: stokes*

stable condition: period of time when no evolutions are in progress

stable isotope: a nuclide that does not undergo radioactive decay

Staff & Compl: Staffing & Compliance

STAGEFIX: abbreviation used on a Tool Order to refer to a stage fixture

standard base cost: cost of labor and materials used in computing yield cost

Stat & Sys Anal: Statistics & Systems Analysis

statistical sampling: a statistically valid technique used to select elements from a population, including probability sampling, simple random sampling, systematic sampling, stratified sampling and cluster sampling

status code: a code that is input into MMS that indicates where the work request is in the overall maintenance work control flow

status log: see "Document Status Log"

stay time: the period during which personnel may remain in a restricted area before accumulating permissible exposure

std: standard

std dev: standard deviation

Stds Lab: Standards Laboratory

STEM: scanning transmission electron microscope (microscopy)

STEP: Service Toward Employment Program

STEPDPMA: abbreviation used on a Tool Order to refer to a step depth master

step-off pad: area designated for donning and removal of shoe covers and for surveying personnel and materials to prevent the spread of radioactive contamination

stm or STM: steam

Stockpile Approved Product Record (SAPR): all the recorded evidence of the production manufacturing activities required to produce a shipping level component or assembly

Stockpile Laboratory Test (SLT): (1) an evaluation, under controlled conditions, conducted on DOE weapon systems randomly selected from stockpile; (2) a unit or component from a weapon, returned from stockpile for both non-destructive and destructive testing; information from these tests is used by the Design Agencies to assess the aging characteristics of a weapon program and determine the stockpile integrity of that program

Stockpile Reliability Evaluation Program (SRAP): the testing program at RF providing integrity information for unit/components as part of the overall DOE-AL Quality Assurance Program; includes non-destructive testing of Shelf Studies, moderate non-destructive and destructive testing of retirements, and comprehensive non-destructive and destructive testing NMLTs, SLTs, Flight Tests, and Command Disabled Units

STP: (1) standard temperature and pressure*; (2) Sewage Treatment Plant

STPDPGA: abbreviation used on a Tool Order to refer to a step depth gage

STRGA: abbreviation used on a Tool Order to refer to a straightness gage

strontium: a soft, malleable, ductile, bivalent, metallic element of the alkaline-earth group, occurring only in combination and used in the production of some ferrites

strontium 90: a heavy radioactive isotope of strontium, having the mass number 90, present in the fallout from nuclear explosions and hazardous because, like calcium, it can be assimilated in biological processes and deposited in the bones of human beings and animals; also called "radiostrontium"

SU: Standard Unit

subcontractor: any manufacturer, processor or supplier performing work for, or providing material to, a prime contractor or another subcontractor in the production of material for the DOE

subcritical mass: an amount of fissionable material insufficient in quantity or of improper geometry to sustain a fission chain reaction

Subject Matter Expert (SME): a person with technical expertise and knowledge in specific work area

Supervision: the management responsible for a particular operation and includes any level of management from foreman and higher

Supervisor: any functional supervisor or foreman who directs process or process/building support activities on a shift-by-shift basis

Supp.: Supplement*

Supp Funct: Support Functions

Supp Lab: Support Laboratory

supplier: (1) any individual or organization who furnishes items or services in accordance with a procurement document; (2) an all-inclusive term used in place of any of the following: vendor, seller, contractor, subcontractor, fabricator, consultant, and their subtier levels

supplies: items for general departmental use; can be either Warehouse stock items or direct purchase (non-stock) items.

Supp Ops (Support Ops): Support Operations

support services: based on current RF procedures, criteria governing support services is as follows:

1. **security escort requirement:** uncleared construction personnel who must enter a secured exclusion zone shall be escorted by a security guard in accordance with the latest Rocky Flats security procedures. Requests to Plant Protection for normal scheduling of guard escorts shall be generated by Construction Management

2. **Radiation Monitoring requirement:** Radiation Monitoring is required for all work involving known or suspected contamination from plutonium, uranium, americium, beryllium and asbestos. Monitoring may also be required when using radioactive sources and radiation-producing devices. This includes any work inside a Radiation Control Area or beryllium process areas. Uncontrolled areas that involve items such as process waste piping or valve vaults also require Radiation Monitoring.

3. **Waste Operations Requirements:** Waste Operations input and guidance is required for all work that generates low level, transuranic and/or hazardous waste. Size reduction, waste handling, waste container requirements, packaging compliance and waste disposal is an essential part of any job and must be planned, scheduled and controlled on all projects.

surfactant: also called surface-active agents, detergents, wetting agents, and emulsifiers, surfactants reduce the surface tension of water allowing that water to more easily penetrate another liquid or porous solid

surveillance: (1) a narrow scope investigation, performed by an individual independent from the organization under surveillance, which determines by direct observations that activities are being performed in accordance with applicable procedures, drawings, and specifications. Surveillance provides consistent measurement of critical attributes, performance visibility to management, and a mechanism for identification and prioritization of issues requiring corrective actions; (2) the use of instrumental and human observation and safing devices to indicate or detect the movement of nuclear material and to supplement material accountancy so as to ensure that the material balance obtained is realistic for safeguards purposes

Surveillance Requirements (SR): surveillance requirements address testing, calibration, monitoring, and/or inspection to ensure that necessary quality and operational status of systems and components and documentation thereof are maintained. Surveillance ensures that parameters and setpoints are periodically verified to be within the LCO.

survey: a study to (1) find the radiation or contamination level of specific objects or locations within an area of interest; (2) locate regions of higher-than-average intensity; (see "personnel monitoring")

survey meter: any portable radiation detection instrument especially adapted to establish the existence and amount of ionizing radiation present (see "counter")

SUSCEPTR: abbreviation used on a Tool Order to refer to a susceptor

suspect human carcinogen: any material associated with industrial processes which is suspect of inducing cancer, based on either limited epidemiological evidence or demonstration of carcinogens in one or more animal species by appropriate methods

Sv: sievert

SWAGETL: abbreviation used on a Tool Order to refer to a swage tool

SWI: Steel Window Institute

SWIMS: Solid Waste Information Management System

SWMU: solid waste management unit

SWRF: Stored Waste Retrieval Facility

SXR: see "Specification Exception Release"

Sys: Systems

Sys & Ops: Systems & Operations

Sys Dev: Systems Development

system operational (SO) test: (1) a comprehensive, integrated test performed on facilities, production and waste process equipment, systems or processes after Construction Component (CC) testing to demonstrate conformance to specification and operability. Systems are checked individually and as a complete unit. Examples of systems covered include: heating, ventilation, and air-conditioning (HVAC); utility, pump, control, computer software, power supply; fire, security, and plant warning alarm; chemical processing equipment, etc. The project remains in installation/construction status until SO testing is satisfactorily completed. (2) a test that quantifies overall system(s) performance or at least the performance of more than one component. System tests also may provide performance data for specific components.

system oxygen analyzer: an instrument with an oxygen sensor placed in the Zone I inert supply/recirculation system for controlling the nitrogen flow and alarming at 5% oxygen by volume

Systems Engineering: the group within Program Management which provides technical, administrative, and management support throughout the Plant

t

t: triton*

T: (1) tau (uppercase); (2) tee; (3) temperature; (4) tera (prefix = $1-^{12}$)* (5) tesla*; (6) ton*

TA: Travel Authorization (form)

TACKFIX: abbreviation used on a Tool Order to refer to a tack fixture

TADS: Transuranic Advanced Disposal System

TAG: (1) Technical Advisory Group; (2) Text and Graphics

tag: a prominent warning notice to be securely attached that forbids the operation of a device

tailings, tails: see "mill tailings"

tamper: material used to direct the force of an explosion by itself resisting motion

Tamper-Indicating Device (TID): device which may be used on containers and areas which, because of their uniqueness in design or structure, reveal violations of their containment integrity; includes seals, mechanisms, containers, and enclosures

tanh: tangent (hyperbolic)*

Tank Surv & Chem Makeup: Tank Surveillance & Chemical Makeup

TAS: Transfer Accountability System

task: a well-defined unit of work having an identifiable beginning and end with two or more activities

task analysis: the systematic process of examining a task by interviewing job incumbents to identify required skills, knowledge, conditions, standards, elements, and/or abilities for successful task performance

T_b: biological half-life

TB: (1) block, connecting; (2) board, terminal

TC: thermocouple*

TCA: Tile Council of America, Inc.

TCE: trichloroethylene

TCWCIS: Transuranic Contaminated Waste Container Information System

TDL: total dust loading

TE: (1) test engineer; (2) totally enclosed; (3) technical evaluation

teacher: in robotics, an individual who initiates generation and storage of a series of positional data prints effected by moving a robot arm through a path of intended motions

team audits: performed by groups of three to five people under the direction of a Lead Auditor; members are selected from management and technical professionals; topics are assigned to each team member to assure that auditors do not review areas of their direct responsibility; generally broad in scope, evaluating several quality elements in relation to a specific program or product

TEC: Total Estimated Cost

technical baselines: are established at various project steps as follows: (1) Functional Requirements Baseline: the initial baseline, documentated by the scope or planning-level design; (2) Technical Requirements Baseline: the basis for preliminary (Title I) design and established at the comletion of conceptual design; (3) Design Requirements Baseline: the collection of documentation that defines Title I design and is the basis for the definitive (Title II) design; (4) Design Baseline describes the facilities, systems, and equipment as documented by the approved Title II design; (5) Final Configuration Baseline: established at construction completing through issuance of the set of "as-built" drawings

Technical Information Exchange (TIE): engineering policies and procedures used by the Design Agency and Rocky Flats for exchanging design definition information

technical justification: a statement of the basis for a REPAIR or USE-AS-IS disposition in engineering terminology; may include comments to the effect that the items sizing calculations show it can perform the needed function, but with a reduced design factor or that the item still complies wih applicable codes and standards

technical reviewer: independent, outside observers trained in a specific technical field, who review the operations or proposed project plans of another organization or group

technical specialist: an individual assigned to the quality or safety audit team who has applicable technical experience or expertise to assist in the investigation and evaluation of the organization or activity being audited

Technical Writing: a service organization within Program Management responsible for originating and maintaining written procedures required for processing and inspecting products made to WR directive schedules, as well as other procedures used internally by various organizations at Rocky Flats

Tech Ops: Technical Operations

Tech Pubs: Technical Publications

Tech Writing: Technical Writing

TEFC: totally enclosed fan cooled

T_{eff}: effective half-life

telecon approval: document approvals received through telephone communication

TEM: transmission electron microscope (microscopy)

temp: temperature

TEMP: abbreviation used on a Tool Order to refer to a temperature

tenth thickness: the thickness of a given material that will decrease the amount (or dose) of radiation to one-tenth of the amount incident upon it. Two-tenth thicknesses will reduce the dose received by a factor of 10 x 10; i.e., 100, etc. (see "shielding")

TENV: totally enclosed nonventilated

terrestrial radiation: the portion of natural radiation (background that is emitted by naturally occurring radioactive materials in the earth

testing: an element of verification for the determination of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operating conditions

test ops: test operations

THDDPGA: abbreviation used on a Tool Order to refer to a thread depth gage

theft: for nuclear material theft, the intentional, unauthorized removal of nuclear material to a location not authorized to contain nuclear material

thermalization: the process undergone by high-energy (fast) neutrons as they lose energy by collision (see "neutron, thermal")

thermal (slow) neutron: a neutron in thermal equilibrium with its surrounding medium; a neutron that has been slowed down by a moderator

thermoluminescent dosimeter (TLD): a dosimeter utilizing one or more phosphors which, when heated, produce light in proportion to their absorbed radiation dose

thermonuclear reaction: the technical name for "fusion;" "thermo" because very high temperatures are necessary, and "nuclear" because forces in the nucleus of an atom are involved

thorium: a naturally radioactive element with atomic number 90 and an atomic weight of approximately 232; the thorium-232 isotope is abundant and can be transmuted to fissionable uranium-233 by neutron irradiation

TID: see "tamper-indicating device"

TIE: see "Technical Information Exchange"; see also "TIE Coordination ER"

TIE Coordination ER: a release of Design Agency-prepared TIE (single drawing system) drawings to a Product Engineer for review and request of required additional manufacturing information

TIG: tungsten inert gas (a welding process)

time delay: the time interval between an input function and the output function

TIR: total indicator reading

TLCC: Total Life Cycle Costs

TLD: see "thermoluminescent dosimeter"

TLHLDR: abbreviation used on a Tool Order to refer to a tool holder

TLLα: total long-lived alpha

Tlng & Cont: Tooling & Controls

TLPOST: abbreviation used on a Tool Order to refer to a tool post

Tlr: trailer*

TLSETR: abbreviation used on a Tool Order to refer to a tool setter

TLV: threshold limit value

Tm: thulium

T-M: time and materials

TMS: see "Tool-Made Sample"

TNT: trinitrotoluene; the explosive compound found in dynamite and other high explosives

"to" item: an item which will gain a new identity based on the change of composition in one or more "from" items

Tool & Fixt Des: Tool & Fixture Design

Tool Engrg: Tool Engineering

Tool Grind: Tool Grinding

tool-made sample (TMS): after tooling redesign or new tooling is made, a sample which is run to establish the new tool's usability or accuracy; an SNLL evaluation

tool order: Form RF-4270; provides information and authorization to design, fabricate and/or inspect tooling, gaging and equipment

top secret: level of classification assigned to information or material of utmost importance to national defense and security, the unauthorized disclosure of which could reasonably be expected to cause exceptionally grave damage to national security

TORQFIX: abbreviation used on a Tool Order to refer to a torque fixture

torque setpoint: the value of torque (or the corresponding torque switch setting) required to terminate the valve motor operation

torr: unit of pressure (1333.2 bars)*

total contamination: removable surface contamination plus fixed surface contamination

toxicology: the study of the adverse effects of chemicals on living organisms

T_p: physical half-life

TPA: transuranic package area

TR: Traffic

traceability: the ability to trace the history, application, or location of an item and like items or activities by means of recorded identification

training: a job-specific activity that enhances or provides knowledge and skills needed to perform in the present job

training plan: a plan that describes course management organization, course loading and scheduling requirements, trainee management and evaluation guidelines, instructor qualifications and responsibilities, course facility and equipment requirements, test administration guidelines, training record requirements, and course curriculum outline

training program: a planned, organized sequence of activities designed to prepare individuals to perfrom their jobs, meet a specific position or classification need, and to maintain or improve their performance on the job

transaction: for nuclear materials, any activity that alters the accountability status of nuclear materials

transmittal ER: an authorization which transmits drawing reproducibles or prints to be used by Rocky Flats for information only

trans-shipment: nonaccountable material which is held at Rocky Flats, but has been shipped from one RIS to another

transuranic element: an element above uranium in the periodic table; i.e., with an atomic number greater than 92; all eleven known transuranic elements are radioactive and produced artificially; e.g., curium, lawrencium, and plutonium

trend analysis: the systematic evaluation of data to monitor and identify changes in equipment or activity performance

TRIMFIX: abbreviation used on a Tool Order to refer to a trim fixture

tritium (^{3}H): a radioactive isotope of hydrogen containing one proton and two neutrons; chemically identical to natural hydrogen, tritium can easily be taken into the body by any inhalation, ingestion or absorption path. Decays by beta emission; radioactive half-life is about 12 1/2 years

TRM: Training Reference Manual

Trng: Training; see "Plant Training"

TRU: transuranium or transuranic

truck and truck-tractor combinations: road-able vehicles with three or more axles restricted to plantsite operationally, for which the operator does not possess a current Colorado state Class A or B License

TRUPACT: Transuranic Package Transporter; a Type B container used to transport drums or boxes of transuranic waste

TS: Technical Security

TSA: Technical Safety Appraisal

TSCA: Toxic Substances Control Act

TSCA-regulated: waste materials which contain hazardous constituents regulated by the U.S. Environmental Protection Agency pursuant to 40 CFR, Parts 702-799; materials may or may not be contaminated with radioactive materials

TSD/DOE: Transportation Safeguards Division/Department of Energy (DOE/AL)

TSO: time-sharing option

TSP: total suspended particulates

turnover checklists: a standard mechanism used by operating or support personnel as an aid in verifying and recording procedural and technical requirements; provides a convenient method of denoting equipment in service, limiting conditions of operation status, surveillances in progress, and other documents oncoming personnel should review to ensure a complete transfer of building status information

TW: (1) Tower Water; (2) Technical Writer; (3) Technical Writing

TWEDM: traveling wire electrode discharge machining

TWSO: Transuranic Waste Systems Office

TWTF: Transuranic Waste Treatment Facility

TWX: teletype transmission

type weapon: formerly known as Type 5; any of a variety of non-WR configurations employed in training exercises, special test or specific applications

u

u: micro (prefix = 10^{-6})

U: (1) unclassified; (2) uranium

UBC: Uniform Building Code

μCi: microcurie

μCi/ml: microcurie per milliliter

UCNI: Unclassified Controlled Nuclear Information

UEIC: Unplanned Event Information Center (RF)

μg/f: micrograms per filter

μg/m^3: micrograms per cubic meter

uhf: ultrahigh frequency*

UL: Underwriters' Laboratories Incorporated

ULD: upper level discriminator

ULH: see "Unit Labor Hours"

ultimate user (UU): the military service division to which a DOE item is delivered

ultraviolet: electromagnetic radiation of a wavelength between the shortest visible violet and low-energy X-rays

uncertainty: a generic term indicating the inability of a measurement process to measure the correct value

unit cost: see "component unit cost"

Unit Labor Hours (ULH): (1) the number of work hours, impacted by both yield and realization, that are required to manufacture one acceptable unit for shipment; (2) the labor hours estimated as required to make one deliverable component to the next user; includes direct chargeable hours and allocated hours for realization impacts; maintained by Industrial Engineering on all components, based on current design process information

unrestricted area: the area outside the owner-controlled portion of a nuclear facility (usually the site boundary)

Unreviewed Safety Questions (USQ): a significant modification (physical or administrative) to a nuclear facility, such that a proposed change, operation, test, or experiment: (1) significantly increases the frequency of occurrence, consequences, or risk of an accident or malfunction of equipment important to safety previously evaluated by safety analysis; (2) creates a possibility for an accident or malfunction of a different type than previously evaluated by safety analysis which could result in significant consequences; or (3) reduces the reliability of any item for which credit has been taken for the reduction or control of a hazard

unscheduled scram: any unplanned scram of an experiment caused by actuation of the safety system, operator error, equipment malfunction, or a manual scram in response to conditions which would adversely affect safe operation, not including scrams during testing or check-out operations; see "scram"

unstable isotope: a radioisotope

UOR: Unusual Occurrence Report

UPS: (1) uninterruptible power supply; (2) United Parcel Service

UPW: uniform present worth

uranium: a naturally radioactive element with the atomic number 92 and an atomic weight of approximately 238; the two principal naturally occurring isotopes are uranium-235 (0.7% of natural uranium) and uranium-238 (99.3% of natural uranium); found in minerals including pitchblende and carnotite; emits alpha and beta radiation

uranium enrichment: see "isotopic enrichment"

uranium millings (tails): see "mill tailings"

U.S.: United States

USCS: United States Commercial Standard

USDOE: United States Department of Energy

use-as-is: a disposition permitted for a nonconforming item when it can be established that the item is satisfactory for its indended use and that the item under consideration will continue to meet all functional requirements, including performance, maintainability, fit, and safety

used-up: an item with a nuclear weight of zero

user: (1) in robotics, person who uses robots and who is responsible for the personnel associated with the robot operation; (2) anyone properly trained to handle radioactive sources; (3) any employee or group who has primary authority over a piece of equipment and who is accountable for its proper use

USS: United States Standard

UST: underground storage tank

USWA: United Steelworkers of America

UT: ultrasonic testing

Util.: Utilities

Util & GB Des Engrg: Utilities & Glovebox Design Engineering

UTS: ultimate tensile strength

UU: see "Ultimate User"

uv: ultraviolet

V

V: volt*

VA: volt-ampere*

VA: Veteran's Administration

V ac: volt-alternating current*

vac.: vacuum

VACCHBR: abbreviation used on a Tool Order to refer to a vacuum chamber

valence: see "oxidation number"

validation: the act of giving official sanction or status to an item, process, service, or document

vapor: the gaseous form of substances that are normally in liquid or solid form

VAr: reactive volt-ampere*

VAR: (1) vacuum arc remelt; (2) volt-ampere reactive*

variance: a measure of the dispersion of a set of results

VAX: virtual address extension

V dc: volt-direct current*

vdf: video frequency*

VDT: video display terminal

vel: velocity*

verification: the act of reviewing, inspecting, testing, checking, auditing, or otherwise determining and documenting whether items, processes, services, or documents conform to specific requirements; an act of ensuring a condition of a vital system conforms to specified requirements

verification measurement: a quantitative remeasurement to verify an existing measured value previously recorded

verifier: a knowledgeable person who is responsible for verifying that a Lockout/Tagout has been implemented or the Lockout/Tagout has been removed properly

very high radiation area: any area within a controlled area where an individual can receive a dose of 5 Rem or greater in one hour at 30 cm from the radiation source or from any surface through which the radiation penetrates

vhf: very high frequency*

VI: Vermiculite Institute

vibr.: vibration, vibrator

VIM: vacuum induction melting

violation of LCO/SL/ASC/SR: failure to shut down operations involving hazardous materials when the OSR out-of-tolerance exceeds the condition restoration time, or failure to implement remedial actions while continuing to operate; also pertains to non-compliance with Design Feature and Administrative Controls requirements

visitor: (1) a non-EG&G, non-contractor, non-Rocky Flats Office DOE employee; (2) an EG&G employee, DOE employee, or any other person authorized to visit the facility whose job does not normally require the use of respiratory protection. While visiting a Respirator Control Area, a visitor is expected to wear a respirator for egress only; (3) any person entering a building to which they are not normally assigned

vital system: Vital Safety System List is comprised of systems held to be vital by Facilities Engineering, Utlities, Safety Analysis, Building Manager, HS&E Engineering, Electronic Security, and the Fire Department

viz: namely

vlf: very low frequency*

V/m: volt per meter*

VMC: Valve Maintenance Corridor

VOC: volatile organic compound

vol.: volume

vol %: volume percent*

vs: versus

W

w: width

W: (1) watt*; (2) west*

WAC: waste acceptance criteria

WAD: Work Authorizing Document

walkdown: a detailed administrative or physical review of each process or support control system by the offgoing and oncoming shift person

WALTHKGA: abbreviation used on a Tool Order to refer to a wall thickness gage

WALTHKMA: abbreviation used on a Tool Order to refer to a wall thickness master

WANTO: Weapons Agencies Nondestructive Testing Organization

warning: an energized and/or audible annunciator or light that serves to alert an operator that action must be taken to prevent an alarm condition

warning limits: quantity limits for inventory differences which, when exceeded, require investigation and appropriate action. For processing, production, and fabrication operations, warning limits will be established with a 95% confidence level

war reserve (WR): weapon components produced by Rocky Flats for the Department of Defense

War Reserve (WR): product which is intended for stockpile use

War Reserve (WR) Development: tests and activities, using full-scale development product, to characterize the effects of process variables and their interactions on the product, from which WR manufacturing parameters are typically established

WASHRDIE: abbreviation used on a Tool Order to refer to a washer die

WASP: Waste Accountability, Shipping and Packaging

waste: (1) residues that have been determined to be uneconomical to recover; (2) nonradioactive liquids, solids and depleted uranium scrap metals deemed to have no recoverable value and radioactive residues determined by measurement to have an assay equal to or less than the DOE-approved Economic Discard Limit

Waste Ops: Waste Operations

waste, radioactive: solid, liquid and gaseous materials from nuclear operations that are radioactive or become radioactive and for which there is no further use. Wastes are generally classified as high-level (having radioactivity concentrations of hundreds of thousands of curies per gallon or cubic foot), low-level (in the range of less than 1 microcurie per gallon or cubic foot), or intermediate-level (between these extremes).

Waste Sys: Waste Systems

Waste Tech & Cert: Waste Technology & Certification

Wb: weber*

WBS: see "Work Breakdown Structure"

WC: water column

WCF: Water Conditioning Foundation

WCLIB: West Coast Lumber Inspection Bureau

WD: weapons data

WDCR: see "Weapon Design & Cost Report"

WD Procedure: working draft procedure issued by Technical Writing and used in development activity

WDS: wavelength dispersive spectroscopy

w.e.: water equivalent*

weapon conception: DOE Phase 1; studies by DOD and DOE, either jointly or independently conducted, which may result in the decision that a weapon concept warrants a formal program study; see P&C Handbook 3.1

Weapon Design and Cost Report (WDCR): a pre-Phase 3 paper that provides baseline design information and cost estimates for the entire weapon program; initiated with the release of the Weapon Program Description (WPD)

Weapon Program Description (WPD): document prepared by Sandia National Laboratories containing the narrative description of the weapon program, illustrations, flow charts and interproject group summaries for new production and retrofit, when necessary, for a weapon program

weapon-related material: any material other than weapons material being developed and produced for or by the DOE and intended for use in conjunction with, or in any way related to, weapons

weapons material: includes DOE weapons and any assemblies, components, or parts thereof, and associated test and handling equipment

Weapons Programs Control (WPC): group within the Controller's directorate which provides dedicated matrix support in the areas of costing, budgeting, scheduling, cost and performance analysis, and control

weapon support definition: document prepared by Sandia National Laboratories, containing the final assembly definition, all interproject group definitions for new production, and factory retrofit or field retrofit kit definitions when required

WEARPL: abbreviation used on a Tool Order to refer to a wear plate

WERC: Wind Energy Research Center

WFBMA: Woven Fabric Belting Manufacturers Association

WG: water gage

W/g: watts per gram*

W-HA: Walsh-Healy Act (law)

white drum: a 55-gallon container used to accumulate and store waste nuclear materials

whole body counter: a device used to identify and measure the radiation in the body (body burden) of humans and animals; uses heavy shielding to minimize the interference of background radiation on ultrasensitive radiation detectors and electronic counting equipment

whole-body exposure: an exposure of the body to radiation, in which the entire body, rather than an isolated part, is irradiated. Where a radioisotope is uniformly distributed throughout the body tissues, rather than being concentrated in certain parts, the irradiation can be considered as a whole-body exposure.

WIP: Work In-Process

WIPERG: abbreviation used on a Tool Order to refer to a wiping ring

wipe sample (swipe or smear): a sample made for the purpose of determining the presence of removable radioactive contamination on a surface. It is done by wiping, with slight pressure, a piece of soft filter paper over a representative type of surface area; also known as a "swipe sample"; referred to as "smears" at some facilities

WIPP: Waste Isolation Pilot Plant

WIPP-WAC: Waste Isolation Pilot Plant--Waste Acceptance Criteria

WIS: Weapon Information System

WLDCHUCK: abbreviation used on a Tool Order to refer to a weld chuck

WLDFIX: abbreviation used on a Tool Order to refer to a weld fixture

WMD: Water Management Division (EPA)

W/m·K: watt per meter kelvin*

WMO: Waste Management Office

WO: Work Order

WOG: water, oil, gas

Work Breakdown Structure (WBS): (1) a family tree representation and identification of a program's objectives, including the end objective and successively smaller objectives and supporting work tasks; (2) the subdivision of a project effort; (3) a cost control device used to identify all activities associated with a particular weapon program

work code: two character code that describes in what type of work category the work request fits

work envelope: in robotics, the volume of space enclosing the maximum designed reach of the robot manipulation, end effector, work piece, and the robot itself

working alone: hazardous or non-hazardous work in locations or at times which cause an employee to be isolated from audio or visual contact for more than one hour

working standards: process items which have been frequently measured or characterized by a more accurate measurement technique and traceable to a national measurement base; are used in performance testing

work instructions: procedures which outline details of how an operation or process are to be accomplished, including the tools and equipment necessary to successfully complete the operation or process

WP: (1) Work Package; (2) word processing

WPA: Western Pine Association

Wpc: watts per candle*

WPC: see "Weapons Programs Control"

WPCS: Work Package Cover Sheet

WP&DE: Waste Product & Design Engineer

WPD-O: Waste Programs Division--RWMC Operations Branch

WPML: Work Package Material List

WPTP: work package task pages

WQD: Water Quality Division (CDH)

WR: see "War Reserve"

WRAP: waste processing and packaging

W/S: workstation

WS&A: weekly sickness and accident

W/sr: watt per steradian*

WSTI: Welded Steel Tube Institute

WstMD: Waste Management Division (EPA)

WstMgt: Waste Management (RF)

wt: weight

wt %: weight percent*

WWPA: Western Wood Products Association

X

X: chi (uppercase)

XLO: Ex-Cell-O

X-rays: penetrating electromagnetic radiation (photon) having a wavelength that is much shorter than that of visible light. These rays are usually produced by excitation of the electron field around certain nuclei. In nuclear reactions, it is customary to refer to photons originating in the nucleus as gamma rays, and to those originating in the electron field of the atom as X rays. These rays are sometimes called roentgen rays after their discoverer, W. K. Roentgen.

xu: x units*

y

Y: yaw (degrees)*

YCA: see "Yield Cost Assessment"

yd^2: square yard*

yd^3: cubic yard*

yellowcake: a product of the uranium milling process, yellowcake is a solid uranium compound that takes its name from the color and texture. Yellowcake is the initial feed material to the fuel cycle.

yield: the amount of acceptable product, expressed in percent of total initiated, finally produced in a manufacturing operation; ratio of number of acceptable parts to number of parts started

yield cost: ratio of Standard Base Cost to Yield

Yield Cost Assessment (YCA): the ratio of the Standard Base Cost to the Yield Cost

ys: yield strength

Z

Z: (1) atomic number; (2) zetz (uppercase)

Z_{eff}: effective atomic number

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Nuclear Facilities Operations Manual

Production Control Handbook

Production Operations Procedure Manual

Program Management Manual Glossary

Radiological Operating Intructions

The Rocky Flats Plant Manual

Rocky Flats Plant Site Environmental Report for 1988

Rocky Flats Policies Manual

Rocky Flats Terminology Standards Manual

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